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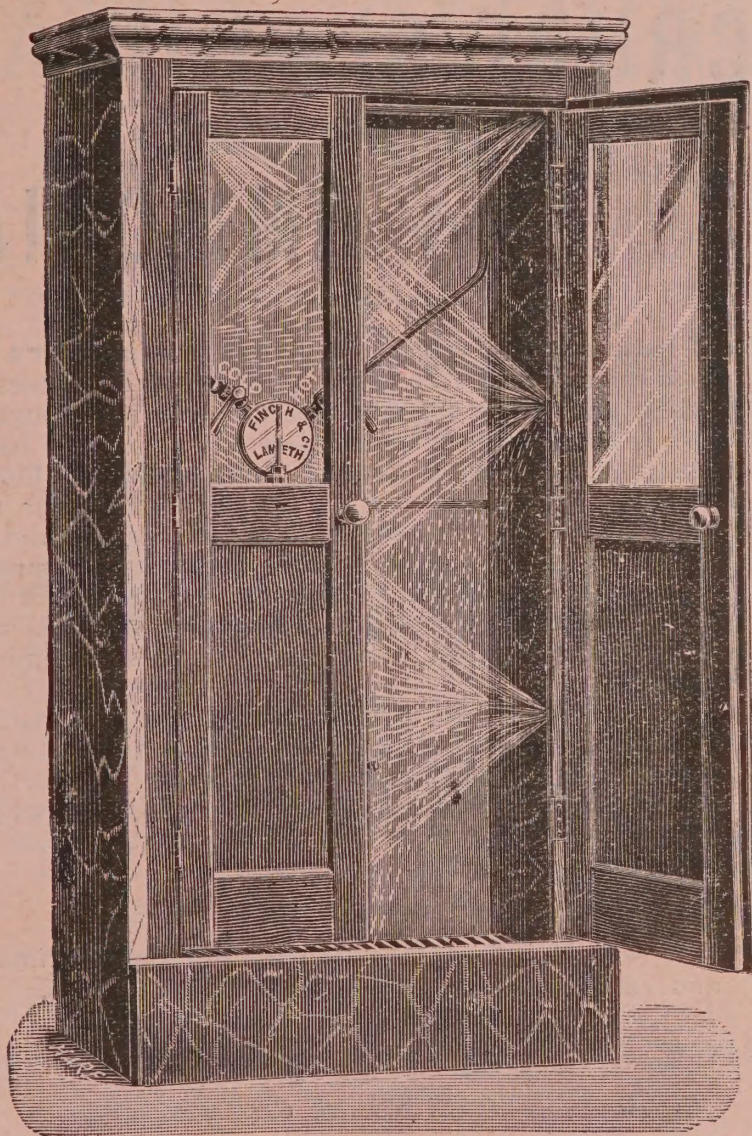
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"CLEANLINESS IS NEXT TO GODLINESS."

BATHS & BATHING:

A BOOK FOR EVERYBODY.

HOW TO BATHE,

WHEN TO BATHE,

WHEN NOT TO BATHE,

ETC.

BY

JOSEPH FARRAR, M.D., L.R.C.P. Ed., L.R.C.S. Ed., &c.

GAINSBOROUGH, LINCOLN.

*Late Medical Visitor and Adviser to the Morecambe Baths and Winter
Gardens Company.*

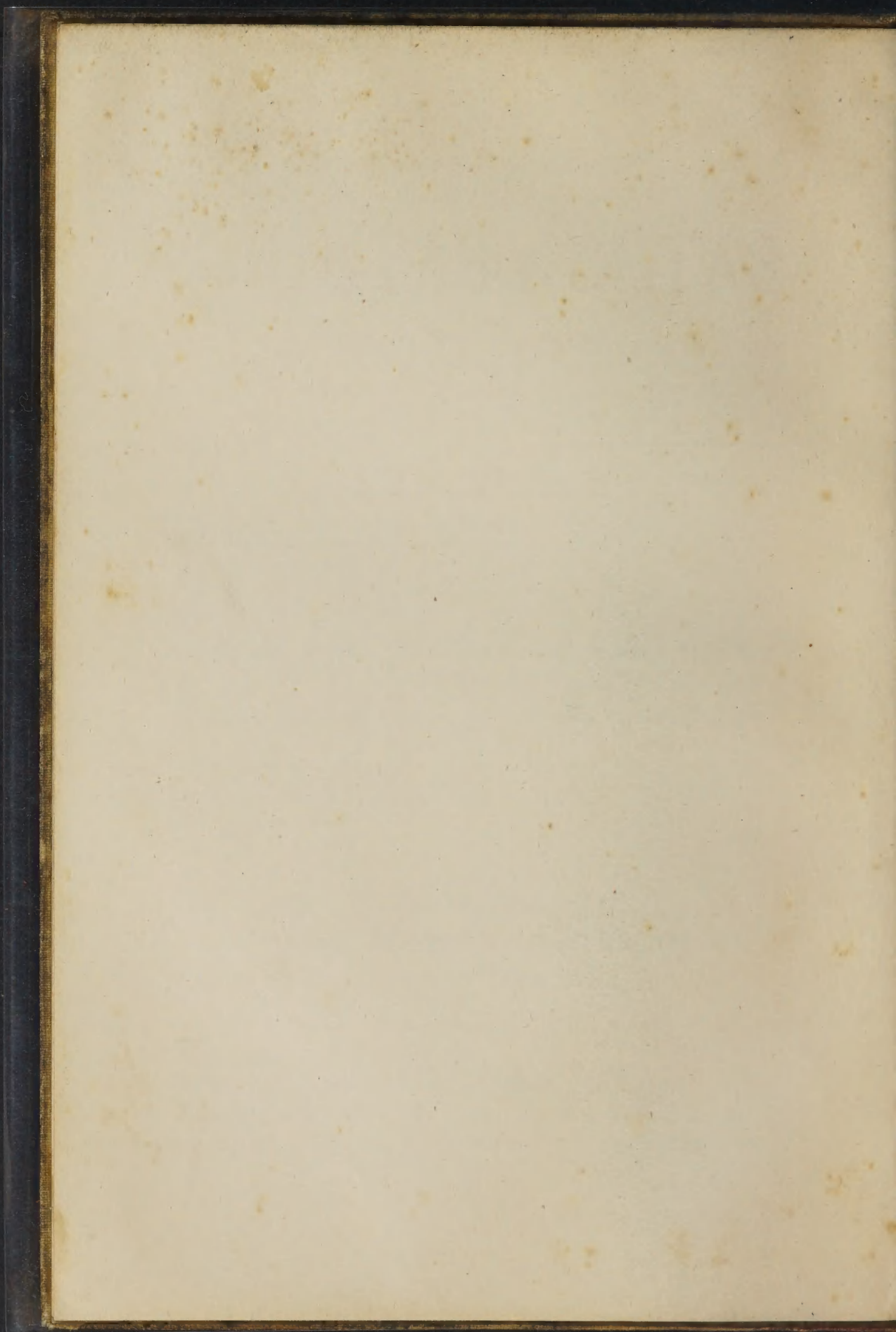
Author of "NEURALGIA AND ITS TREATMENT," "THE CONSTRUCTION OF THE
ORGANS OF THE HUMAN VOICE, AND OF CONNECTED PARTS:
THEIR DISEASES AND TREATMENT," ETC., ETC.

FOURTH EDITION, REVISED AND ENLARGED.

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1890.



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TEMPERATURE OF BATHS.

BATH.	WATER.	VAPOUR.	AIR.
THE COLD ...	33 ⁰ to 65 ⁰ F.
„ COOL ...	65 ⁰ „ 75 ⁰ „
„ TEMP....	75 ⁰ „ 85 ⁰ „
„ TEPID...	85 ⁰ „ 92 ⁰ „	90 ⁰ to 100 ⁰	96 ⁰ to 106 ⁰
„ WARM...	92 ⁰ „ 98 ⁰ „	100 ⁰ „ 115 ⁰	106 ⁰ „ 120 ⁰
„ HOT ...	98 ⁰ „ 112 ⁰ „	115 ⁰ „ 140 ⁰	123 ⁰ „ 170 ⁰

PREFACE TO THE FOURTH EDITION.

THE present may be regarded almost as a new production. The previous issues of BATHS AND BATHING—of which there have been three—were brought out only in semi-pamphlet form, while this, on the contrary, has been so much re-modelled, re-written, and has had so much new matter added to it, and been otherwise improved, that it has been decided to have it all embodied in a more permanent manner than formerly, and to issue it to the reader in *book* form. Several engravings have also been introduced, which, it is hoped, will further enhance the interest of the book.

The very moderate price of One Shilling at which BATHS AND BATHING is issued, will bring it within the means of all, and still enable it to maintain its original claim to be “A Book for Everybody.”

J. F.

GAINSBOROUGH,

July, 1890.

PREFACE.

ONE of the chief objects which I had in view when I set myself the task of penning a few words on Bathing, and which resulted in the production of this little book, was to draw up and distribute a few simple rules for the guidance of sea-side visitors, or rather such of them as spent an undue proportion of their limited holiday time in the water. There is a large class of visitors to the sea-side who have not more than a few days, perhaps, at the utmost, in which to recruit their health and energies. These, or at least the most thoughtful of them, naturally endeavour to make the best use of their short holiday, and being led from various reasons to think that cold sea-bathing is a *sine qua non*, and one of the most valuable means available for that purpose, yet spend so much of their time in the water that often more harm comes of it than good. It was to lay before these persons such information as would safely guide them, not only out of many unthought-of dangers appertaining to the improper use of the cold water, but into such an intelligent use of it as would send them back to their

homes full of renewed life and energy, and cause them to feel that their little trip, instead of being a source of regret to them, had been in this respect one of great benefit and permanent pleasure, that the following pages were originally conceived.

The chief error made is the very common one of staying in the water far too long, and the subsequent neglect, from sheer want of knowledge on the subject, of taking sufficient physical exercise to get up due *reaction*. It has often been quite painful to me to notice for what a length of time some bathers stay in the water, not generally, however, the experienced bathers, but those who require proper guidance and information on these matters.

I soon found, however, that, greatly as I desired not to treat the subject of bathing with too great a particularity, but to confine myself to a few plain instructions, I should be compelled to abandon this intention, and to add matter that would prove of equal, or even more value and importance, to the public generally. This more extended design has resulted in the treatment of the greater part of the whole subject of Bathing, by which means this little

production will, it is hoped, be rendered more serviceable, and better adapted to the wants of the public at large, whether bathing at the sea-side, in an inland river, in a large public bath—one of which is now found in nearly every large town—or, in case of the more well-to-do, in private baths within their own homes.

The historical part of the subject will, it is hoped, prove not the least interesting portion of the whole. And finally, if the reader find in its perusal and study as much food for profitable thought and action as I have derived from its production, he will have no need to feel regret for his pains, and the object I have had in view will be fully realised.

J. F.



By permission of

REMAINS OF ROMAN BATHS, BATH. (PAGE 14.)

[Messrs. W. Lewis & Sons.]

BATHS AND BATHING.

CHAPTER I.

HISTORICAL RETROSPECT.

THE earliest written statement or reference to the act of bathing with which we have acquaintance, is contained in the second chapter of Exodus, fifth verse, where we find that "The daughter of Pharaoh came down *to wash herself* at the river"—the Hebrew word, of which the verb *to wash*, in the authorised version of the Bible, is a translation, signifying also, and might have been rendered, *to bathe*.* There can, however, be no doubt that the custom of bathing—and more especially in hot countries—must have been practised, if not for cleanliness, yet, by reason of the accompanying pleasure, as well as a ready and well-known means, learnt by experience, of becoming re-possessioned of temporarily lost vigour, long before any mention could be made of it in written language—in other words, long before the invention of writing. It is, indeed, inconceivable that the enjoyment of

* In the Revised Version this latter rendering has been adopted.

immersing one's self in water for a limited space of time, with the subsequent glow of comfort and the elastic buoyancy of the mind and feelings thereby engendered, could, for any lengthened period, have remained undiscovered by man ; and we may therefore, without fear of contradiction, claim for the practice of bathing an antiquity almost as great as the existence upon the earth of man himself.

With the ancient Egyptians we find bathing to have constituted a strict part of their religious observances, the purification of the body with water signifying, and even inducing, according to their belief, and that of other nations of antiquity, *moral* purity ; the feeling being that man should not presume to present himself before his God without purity both of *body* and soul.

We find also that Moses, the ancient leader and law-giver of the Jewish people, very frequently and most strictly enjoins the washing and cleansing of the body. And in all probability, not only for the sake of its typical significance, but also as a recognised and powerful means of preserving the body in a condition of health and activity—a precaution which we cannot but regard as highly wise and prudent, especially in Eastern lands, where skin-diseases more especially are so prevalent. And this sanitary aspect of the question is perhaps strengthened by the circumstance that *running*

water is often expressly ordered for the purpose, thus reducing to a *minimum* the risk of the earlier bathers transmitting to those succeeding them any disease capable of being thus transplanted. By the Jews, indeed, great importance has been always attached to the practice of bathing; as, besides the existence amongst them of public baths, the more wealthy were possessed of baths of their own; and often they had costly and well-arranged reservoirs or ponds placed in their gardens for this purpose, a practice which to this day obtains in Palestine, and the East generally.

Homer frequently alludes to the custom amongst the ancient Greeks, who likewise adopted it as a religious rite, and as preparatory to the marriage ceremony, the consultation of Oracles, &c. Its spiritual significance amongst this people is seen in the purification of the army of the united Grecians under Agamemnon, on the restoration of Chrysëis to her father, as in the following lines from Pope's "Homer's Iliad":—

“The host to expiate, next the king prepares,
With pure lustrations, and with solemn prayers,
Wash'd by the briny wave, the pious train
Are cleans'd; and cast the ablutions in the main.”

It also appears probable, from several circumstances, that this ancient people possessed public baths both for the use of men and women.

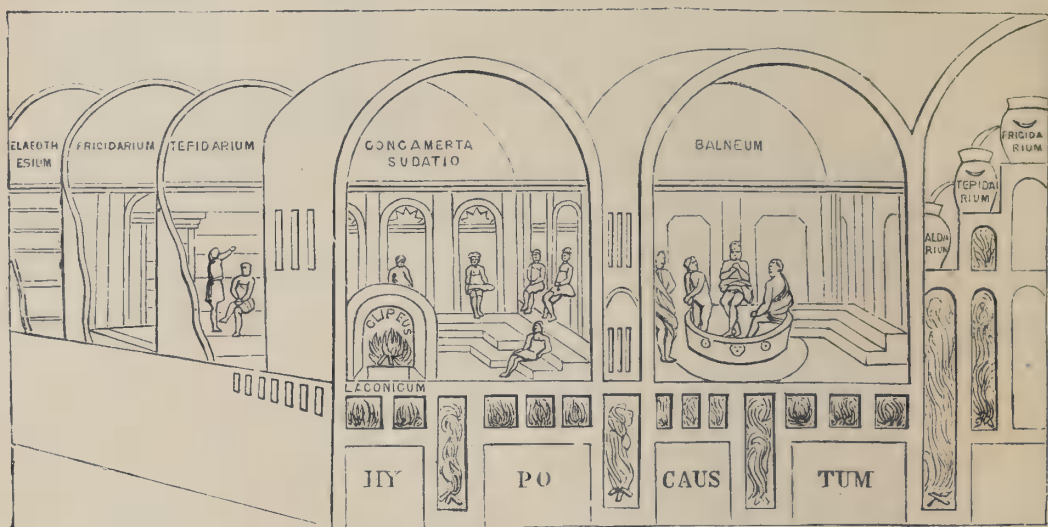
The Romans, from their earliest existence as a

nation, were in possession of the comforts and advantages of both cold and heated baths; and in the latter part of their history, these structures assumed vast proportions. They were erected on a scale of great magnificence: our frontispiece, which gives a view of a portion of the remains now to be seen at Bath, of the Roman warm baths established in that city during the first century, will give some idea of the costly nature of these buildings. The use made of them, however, at this latter period, had degenerated into one of mere effeminate luxury, accompanied by great moral irregularities, and ultimately, it is to be feared, they became the scenes even of undisguised debauchery. The baths built in Rome by the Emperor Caracalla (who reigned A.D. 211-217), though now in ruins, are still, even in their decay, quite magnificent: they stand near the *Porta Capena*. The remains, too, of the baths erected by Titus, and those by Diocletian, are likewise still remarkable, and strongly impress the beholder with a sense of their former grandeur and imposing magnitude. *Thermæ*, or heated baths, have also, within the last few years, been excavated from the ruins of Pompeii. And Germany, France, and England all contribute their quota to the rich store of ancient edifices devoted to purposes of ablution. Their remains, indeed, are found scattered broad-cast all over Europe. The baths of Caracalla just mentioned were of such vast dimensions, and of

so luxurious a character, that it is very difficult for us at the present day to form anything approaching to a just conception of them as they appeared originally. When it is stated that the great and imposing building of St. George's Hall at Liverpool is a reproduction (though improved in detail, both in scale and design) of a portion only of Caracalla's Baths—the central portion or hall—it will be seen that the Romans were no niggards in the attention they paid to these structures. And when it is still further remarked that the whole of this same St. George's Hall equals in size a fourth part only of *the central mass* of the buildings constituting a Roman bath, we cannot but become greatly impressed with the extent and imposing dimensions of these gorgeous edifices.

In a Roman bath there were the following essential parts:—(I.) The stove (or *hypocaust*) for heating, which was placed in the basement-story. It was used both for the bath-rooms and for raising the temperature of the water. And this latter was so arranged in three vessels or reservoirs, that the one nearest the fire contained the *hot* water; the second, placed next above, the *tepid*; and the uppermost, the *cold* water. They were, moreover, all connected by means of pipes with the bath-rooms, and with each other; and in such manner that as the hot water was drawn off, its place became occupied by that contained in the tepid reservoir, this latter,

in its turn, being supplied from the cold tank. By these means the contents of the respective reservoirs were easily maintained at a pretty uniform temperature. (2,) The room (termed the *Apodyterium*) in which the bathers undressed. (3,) The room (*Frigidarium*) with a supply of cold water, generally contained in a small vessel or basin. (4,) A room



SKETCH OF A ROMAN BATH FROM A PAINTING ON THE WALLS OF THE THERMÆ OF TITUS AT ROME.

(the *Tepidarium*) supposed to be set apart for the purpose of bathing in tepid water, though this point is not sufficiently clear to speak positively about. (5,) The *Caldarium*—a room placed immediately over the *hypocaust*, and supported with low pillars. The walls of this apartment were made hollow for the admission of heated air, so that it could be used as a sweating bath (the *Sudatio*); and occasionally

the hot-water bath was taken in this portion of the building. Forming a part of this room was also the *Laconium*, regarded generally as a kind of hot-air stove, heated by the hypocaust, and designed in all probability to still further increase the temperature of the apartment. The bath-rooms were well supplied with seats, placed in rows around the rooms, and sometimes one above another, especially in the *Caldarium*; an arrangement which admitted of a greater degree of temperature being obtainable by the simple process of changing to a higher or lower seat respectively, according as the upper strata of hotter, or the lower of cooler, air were sat in. In the *Caldarium* was also placed a large vessel termed the *Labrum* (or vase), filled with cold water; this, which was large enough to bathe in, was used for dipping in, directly after the use of the hot bath. Connected with the rooms just enumerated was also—in the larger baths particularly—a room termed the *Unctuarium*, or *Elæothesium*, in which the body of the bather, previously to his bath, was anointed with oil. There were also covered walks, well laid-out gardens, enriched with sparkling fountains, halls set apart for amusements and for exercise in the lighter kinds of games, etc.—all of which, of course, added considerably to the size of these striking buildings.

So much for the Roman baths, as they are generally described, and as their remains, found at the present

day, indicate. The plan pursued by the bathers was something as follows:—They were first, after being undressed in the room set apart for this purpose, smeared all over with oil, usually of a coarse description, and then passed at once for exercise into a large hall, where games of various kinds, as playing at ball, and other active exercises, were indulged in. From this they went directly into the *Caldarium*, or sweating-room, where they immediately either took the hot-water bath, or remained for a variable space of time under the influence of the heated air. In either case, the body at this time was usually rubbed or scraped with a kind of rough instruments, termed *Strigiles*. Next, the body was well rubbed with dry cloths, then slightly anointed with perfumed oils, after which the bathers dressed; and before leaving the edifice for the open air, spent a suitable time, first in the *Tepidarium*, and afterwards in the *Frigidarium*, by which means a too sudden change of temperature and its attendant dangers were avoided.

The historian Tacitus, and others, inform us that the ancient Germans preferred bathing in the cold rivers, a contrast, indeed, to the indulgent, if not debilitating manner in which the Romans revelled, especially towards the termination of their national existence. The luxurious bathing habits, however, of this latter people, along with other of their effeminate customs and excesses, became ulti-

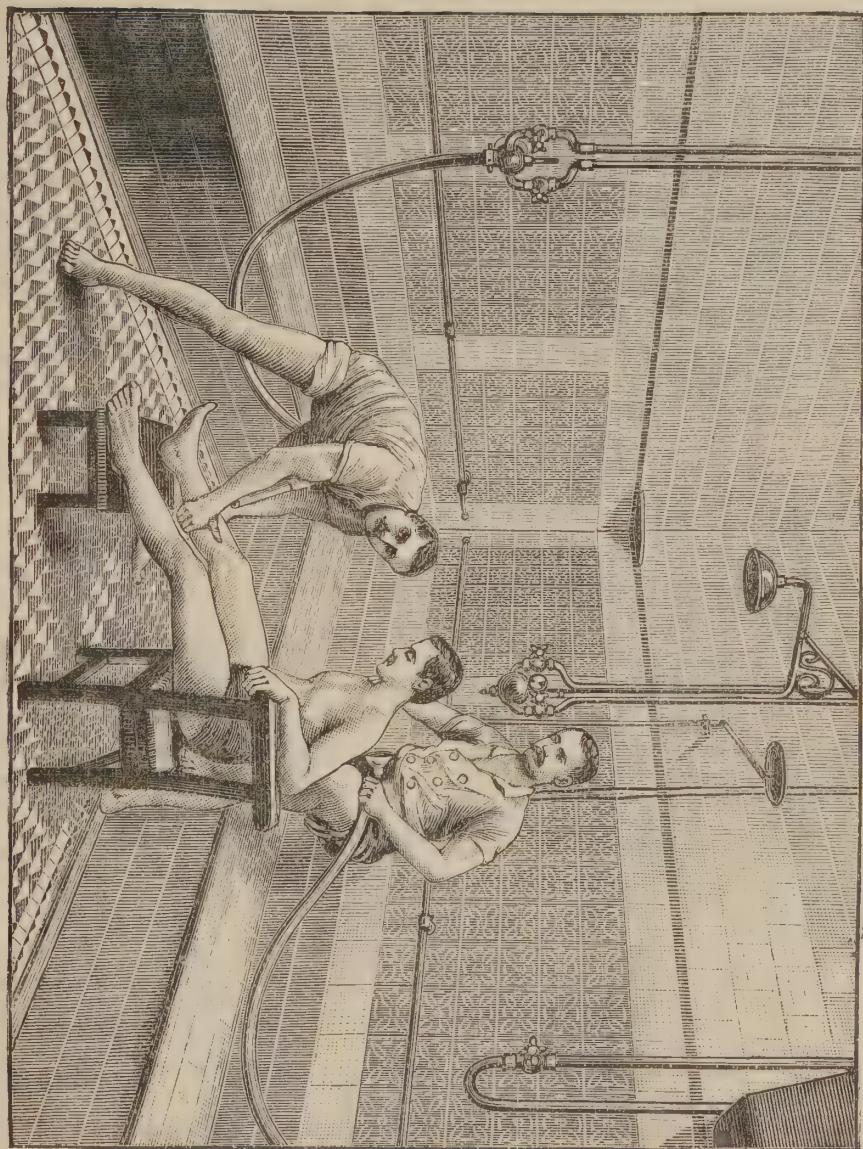
mately overwhelmed and annihilated by the more stern and vigorous manners of the northern hordes who over-ran the Roman Empire ; and it was during those troublous and violent times that the splendid baths of the capital fell, first into comparative disuse, and finally into total wrecks, the remains of which are with us to this day. With the rise and growth of Christianity, however, there was still preserved, in the rite of baptism, the *religious* use of the bath : and even down to the days of chivalry the knight-elect had, among his other duties, to perform ablution at the bath.

With the Arabians and Mohammedans bathing was so intimately incorporated with their habits and customs as to constitute in, perhaps, a pre-eminent degree, a distinguishing characteristic of their social life. With the Mohammedans, repeated daily ablutions were considered obligatory ; and at stated times and seasons, as well as on many special occasions, the rite was performed with great religious solemnity, both by men and women. The use of the bath, indeed, formed so essential a part of the religious observances of the Mohammedans, that with them, as with the ancient Jewish people, public baths were erected in every town of importance, and always where there was a mosque. Besides which, every person of consequence would appear to have considered it an act of duty—as it was certainly a

pleasure—to be possessed of one of his own, placed either in his house or garden, or both. These private baths had a great deal of care and attention lavished upon their construction and surroundings. They were to the Mohammedans—if we exclude the religious question—what a hot-house, for example, is at this day to most middle-class Englishmen—a kind of pet hobby-horse, upon which a great deal of pleasurable solicitude and innocent pride were bestowed.

The baths of the old Arabian days have been copied by the Turks of the present time, and now, under the name of *TURKISH BATHS*, flourish nearly in their original form and splendour in many of the chief cities of the East, besides imitations of them, more or less close, in most of the cities of Europe. They are built most commonly of stone, with floors of marble for the bath-rooms; and, like those of the Romans, are heated from below, the walls of the hot rooms being traversed by numerous tubes which open into them from every quarter. After the bather has undressed, he folds about him a dry blanket, protects his naked feet from the hot floor by means of wooden slippers, and entering the bath-room, soon becomes covered with profuse perspiration. This is then washed off with cold water, the body well rubbed with cloths, and covered thinly with an unctuous material of an emollient character. At the

same time, the bath attendant, who all along superintends the actions of the bathers, and indeed, performs



MODERN TURKISH BATH.
Taken by permission from an excellent little work on "The Art of Bathing," by Dr. Percy Wilde.

the active physical part of the operations, proceeds with what is termed the *kneading* process. This

consists in pressing, squeezing, and otherwise manipulating the body, washing, and pouring water over him, and rubbing him with such coarse materials as hair-cloth and pumice-stone. Then, after perfuming him with scented soap, he finally cuts his hair, trims his beard, and lets him depart, feeling altogether a new creature, a condition of matters brought about in the course of three-quarters of an hour's time, or so. Before leaving for the streets the bather rests a while in rooms of a cooler temperature than that of the bath-rooms; and during this time, whilst reclining or lounging on couches, he partakes of such light and agreeable refreshments as coffee or sherbet.

It was not till the time of the Crusades that the people of the West—as England, France, and Germany—became acquainted with the baths and bathing customs of the Eastern nations. But this intercourse of the West with the East also gave to the former certain skin diseases hitherto unknown to them, such as leprosy; and it was mainly with the view of treating this and other inveterate forms of skin disease—other modes of managing them not having answered their expectations—that the Western nations began to introduce large bathing establishments into their respective countries, a step which, by degrees, led to the erection of public institutions of this kind for *general* bathing purposes.

CHAPTER II.

THE CLASSIFICATION OF BATHS.

FOR convenience, all baths may be considered from a four-fold point of view, and classed accordingly. Thus, firstly, if we pay regard only to *the medium with which the bather is surrounded*, we may speak of it respectively as a WATER-BATH, a GAS-BATH, a SAND-BATH, etc. Or, secondly, if we consider only *the manner of application*, we may have a RIVER-BATH, a PLUNGE-BATH, a SHOWER-BATH, or a VAPOUR-BATH. Thirdly, we may look upon it according to *the part of the body* operated upon, and have a WHOLE-BATH, a HALF-BATH, a SITZ-BATH, or a FOOT-BATH. And lastly, we may regard only *the temperature employed*, and term it a HOT-BATH, a TEPID-BATH, a COLD-BATH, etc. All these appellations are in common daily use, and indicate with clearness what is meant when they are employed. But besides the foregoing, there are others which, though modifications only of one or other of these four classes, are distinguished by other names. Thus, the RUSSIAN BATH is but another form of the Vapour-bath, the vapour or steam being generated by the simple process of throwing water upon red-hot pebbles, the operation being performed in a small

room built of wood, with rows of seats placed around it for the bathers. The heat produced is, however, often great, reaching at times to as much as 140° F., but generally ranging from 112° F. upwards. The after-treatment, that is, that following the sweating period, is in the Russian bath somewhat energetic, to say the least of it. It consists—after the body has been alternately cooled by applications of cold water, and sweated by the hot vapour—in vigorously rubbing it with soap, then with coarse towels, manufactured from the inner bark of certain trees, or even with brushes, flogging or whipping the bather with twigs obtained from the birch-tree, washing with tepid, then with cold water, and ending by dashing cold water all over him! It is, moreover, very common for the Russian to go directly from the Vapour-bath and plunge into the river, or even roll himself in the snow. Nothing is more common in Russia than baths of this description, there being scarcely a hamlet or cluster of huts without them.

In Germany, again, the steam is generated in a boiler, and the plan pursued by the bather is also different. And many primitive nations adopt the expedient of crouching in a hole dug in the ground and heated in a very simple fashion, or of sitting for a variable time in their common baking ovens, and so on. It should perhaps have been previously stated that when some substance intended to operate as a

medicine upon the bather is added to the bath, whether the Vapour or Water-bath, we obtain what is termed a MEDICATED-BATH. Or, when the drug or drugs employed is made to volatilize in its dry state, and in this way surround the naked body (the head being, of course, excluded), we have then a SMOKE-BATH. Sometimes, and more especially amongst the ancients, and people of rude and primitive ways, an animal was slaughtered, and the subject enveloped in the skin, which was stripped off the animal with all the celerity possible. Or, the patient was made to lave in the yet warm blood of the animal, and we thus get an ANIMAL-BATH. But this kind of bath, it need scarcely be remarked, is one which cannot be commended, as, whatever benefit was derived from it was chiefly by virtue of the warmth of the animal, aided, it may be, by some superstitious belief, and not from the operation of anything peculiarly inherent in the animal itself. The COMPRESSED AIR-BATH is a self-explanatory term. The patient sits for a shorter or longer period, according to circumstances, in a room made air-tight, and in which the air is *compressed*, by reason of a greater quantity of it than would be there naturally being forced into the apartment by a steam engine. Such a bath has been found to be beneficial in certain diseases of the respiratory organs.

CHAPTER III.

THE REASONS FOR BATHING.

THE questions may be asked, and very naturally, "Why do we bathe? What objects are intended to be served by the act? and, Why attach so much importance to it?" These may be answered in various ways, but we will confine ourselves to a few of the more palpable and important reasons that might be adduced in favour of the custom; with the hope that the act, which is thought so much of by well-informed people, and is of such inestimable value to man, may yet become a much more popular institution than it has hitherto with the inhabitants of this country.

Firstly, then, BATHING INDUCES CLEANLINESS.

This fact, which will doubtless be the first to strike the mind even of the least thoughtful, possesses, however, from nearly every point of view an importance that can hardly be over-estimated. Considered simply as a moral agent, and leaving out of the question every other recommendation in its favour, bathing is to be highly extolled; for habitual bathing not only induces cleanliness of the body, but, according to the views of great thinkers and moralists, it accompanies and even induces cleanli-

ness of *mind*, or morality. "Cleanliness," says the old adage, "is next to Godliness," as strong a statement as could well be made in its favour, and one showing in as impressive and pithy a manner as can well be imagined, the estimate set upon it from a moral point of view. Rumford, a deep thinker upon this, as upon other subjects, says:—"So great is the effect of cleanliness upon man that it extends even to his moral character. Virtue never dwelt long with filth; nor do I believe there ever was a person scrupulously attentive to cleanliness who was a consummate villain." This writer extends his observations even to the lower animals: for, "With what care and attention," he remarks, "do the feathered race wash themselves, and put their plumage in order; and how perfectly neat, clean, and elegant do they appear!" "Among the beasts of the field," he continues, "we find that those which are the most cleanly are generally the most gay and cheerful, or are distinguished by a certain air of tranquility and contentment; and singing birds are always remarkable for the neatness of their plumage." Thomson also points out the operation upon the mind of cleanliness of the body, in the following couplet:—

"Even from the body's purity, the mind
Receives a secret sympathetic aid."

And Addison becomes quite eloquent in his praises of cleanliness: he observes that "Several vices both of

mind and body are inconsistent with the habit of cleanliness." And again, "It bears a great analogy with chastity of sentiment, and naturally inspires refined feelings and passions." He terms it "the foster-mother of affection:" and asserts that "beauty commonly produces love, but cleanliness preserves it." "Let thy mind's sweetness," says Herbert, "have its operation upon thy body, clothes, and habitation."

Perhaps enough has been said to convince the reader of the great *moral* effect upon man of cleanliness of his body. But we cannot omit to bring before the reader's notice the words of another respected authority upon this question, especially as his remarks have reference also to a cleanly condition of man's HOME. Dr. Southwood Smith thus expresses himself upon this matter:—"I have more than once," he says, "expressed my conviction that the humanizing influence of habits of cleanliness, and of those decent observations which imply self-respect, the best, indeed the only, foundation of respect for others, has never been sufficiently acted on. A clean, fresh, and well-ordered house exercises over its inmates a moral no less than a physical influence, and has a direct tendency to make the members of a family sober, peaceable, and considerate of the feelings and happiness of each other: nor is it difficult to trace a connection between habitual feelings of this sort and the formation of habits of respect for

property, for the laws in general, and even for those higher duties and obligations, the observance of which no laws can enforce."

It is hoped that the indulgence of our large employers of labour will not be over-taxed if we here commend to their especial notice the concluding words of the above quotation, and press upon them the benefits which they themselves will be almost sure to reap from taking a practical and personal interest in the promotion of habits of cleanliness amongst their employees. What could be more satisfactory to a master than to have as his work-people—often numbered, as we know, by thousands—a class of men who are habitually "sober, peaceable, and considerate of the feelings and happiness of each other;" and to have about him men who possess "habits of respect for property"? Or, what more desirable to the ruling powers and to society generally, than to live amongst people who practise "habits of respect for the laws in general"? Or, again, what better for the whole nation at large, or what more cheering to ministers of religion, than to dwell amongst, and be in hourly contact with a people whose predominant characteristic is the possession of "habits of respect for those higher duties and obligations, the observance of which no laws can enforce"?

Cleanliness, then, without doubt, is a great moral engine in the world, and is a condition, therefore,

which should receive every attention at our hands, both as regards our own persons and homes, and the persons and homes of others ; even if morality alone were the sole recommendation to be found in its favour. But—

Secondly—THE VALUE OF CLEANLINESS IS VERY GREAT IN PRESERVING THE BODY FROM THE ATTACKS OF MANY SKIN DISEASES.

If one fact be more fully established than another respecting the origin of certain skin diseases, as they exist both in this and other countries, it is that many of them are fostered, and even engendered, by the long-continued neglect of the simple precaution of preserving the body in a condition of cleanliness. We have already referred in a previous page to the importance with which Moses regarded the practice of washing the body : but with what strictness, frequency, and particularity he enjoined it we can fully appreciate and understand only by reading for ourselves his instructions on this point to the people under his charge, as contained in the Book of Leviticus and elsewhere. And not only, be it again remarked, because of the *spiritual* significance of the act, but also because of the liability of the people whom he ruled, to attacks of various forms of skin disease. The frequency, indeed, with which he insists upon cleanliness, not of the body only, but also of the

clothes, and even the habitations of the Israelites, shows this great leader to have been also a most enlightened sanitarian; though in making this remark we must not lose sight of the constantly-repeated statements of Moses that he received his instructions on these matters directly from God Himself—a circumstance which gives at once to the whole question the most weighty and supreme importance. We have already seen, moreover, that the erection amongst the chief nations of the West of Europe of large bathing establishments was owing to the prevalence among them, since the time of the Crusades, of certain forms of skin disease, which required for their successful treatment, as well as their prevention in others, the frequent employment of the bath—another fact, if more were necessary, to convince us of the great value and importance of cleanliness in a sanitary point of view.

The disease vulgarly termed *the Itch*, and which has come to be regarded as a disgrace to the subject whom it infects, from the well-known fact that it has its habitat in dirt and filth, in which it grows and multiplies, is caused by the presence in the skin of a very diminutive mite, varying in size from the 1-90th to the 1-50th



THE ITCH MITE,
MAGNIFIED 100 TIMES.

of an inch in diameter, too small, indeed, to be recognised by the naked eye, but rendered sufficiently distinct by the aid of a microscope of even moderate powers. And though, when regarded from a scientific point of view, the mite presents several points of great interest, and many beautiful examples of the adaptation of means to ends for the peculiar manner of life which it is ordained to follow, it is, nevertheless, an ugly little brute to live on one's skin. When it finds itself upon the skin, it does not, if the female, and under certain conditions, long remain upon the surface, but soon begins to bore for itself a little tunnel *into* the skin; and in this tunnel it dwells and lays its eggs, which latter are hatched therein, and from which the young issue to the surface, soon to begin new tunnels for themselves, like their mothers before them. Now, the greatest preventive against this disease is habitual cleanliness. There is little chance of a colony of the itch-mite establishing itself upon a skin kept constantly clean; and there is little chance for the parasite if, when by some accident it *has* found a place there, the skin be daily attended to. It is true that when these tunnels have been allowed to form, and the eggs laid, special medical means have to be employed for the removal of the disease; but if cleanliness had previously been habitually practised, the mites would have found no dwelling-place there—no soil in which to grow and multiply.

So, too, with regard to other and similar kinds of vermin, as the various species of lice, which live on the human body and in the hair of children. Constant attention to cleanliness would deprive these minute creatures of the soil necessary for their existence, and render their respective feeding and breeding grounds uninhabitable.

And it is the same with regard to the several kinds of *vegetable* parasites, such as *ringworm*, and similar skin affections. All these are as surely encouraged and attracted by dirt and filth as they are kept at bay by cleanliness. True, ringworms are found on the heads of children who have every attention paid to them, or at least their *bodies*, in the way of cleanliness, but as the disease arises chiefly, if not altogether, from contact with others who are not cleanly, the statement holds good. Besides, if daily attention had been paid to the cleanliness of the hair of the otherwise cleanly, little chance would the parasite of ringworm have of establishing itself therein, even if the child had come in contact with an infected head. Many mothers seem afraid to wash their children's heads.

Thirdly—BY CLEANLINESS THE PORES OF THE
SKIN ARE KEPT OPEN.

In consequence of this, much refuse of a subtle and injurious nature generated within the human system, and which is constantly making its way

through these pores to the surface of the body, is washed away, the cleansing of the skin preventing these minute orifices from becoming choked up with particles of dirt, a circumstance which, as will be seen presently, is of the highest vital moment to the animal economy.

That the force of this statement may, however, be more fully appreciated, it is advisable to explain more particularly what is meant by *the pores of the skin*. When the skin of the human body is carefully examined by the aid of the microscope, it is found to contain, in addition to a multitude of blood-vessels, nerves, sheaths for the hairs, etc., a vast number of very minute channels or tubes, which permeate the skin, and open upon its surface by a corresponding number of exceedingly minute orifices or mouths, the deeper or inner extremity of each channel being coiled up into a small globular mass, and forming what is termed a *Gland*. These glands, which are embedded in the skin, are the *Sweat-glands*; the channels leading from them are the *Sweat-ducts*; and their mouths, opening upon the surface of the skin, are the *Sweat-pores*—or, as we just termed them, *the pores of the skin*. The duty of the sweat-glands is to secrete from the blood the fluid matter which we term *sweat*, or *perspiration*—to use these two words synonymously; and that of the sweat-ducts, to convey this fluid to the surface of the

body through their mouths, the pores. These pores, and the ducts and glands in connection with them, vary considerably in number in different parts of the body, but more than 3500 of them have been counted *on each square inch* of the palm of the hand ; and the total number in the body is estimated generally at about *two and a half millions!* Besides the sweat-glands, however, and their outlets, there are scattered thickly in every part of the skin what are termed *Sebaceous-glands*, which are concerned in secreting from the blood, and getting rid of through their own minute ducts—which also lead to the surface of the skin—a peculiar fatty matter, destined to lubricate the surface of the body, and prevent the injurious action upon it of the moisture of the air. These channels, like those devoted to the carrying away of the perspiratory secretion, are likewise of extreme fineness, and also abound in great numbers, there being two ducts opening into each follicle or sheath of every hair of the head, besides a multitude of others opening directly upon the skin.

Now, the average length of each perspiratory duct—keeping out of our consideration for the present the ducts of the sebaceous-glands—measures about the one-fifteenth of an inch, and as there are, even on a modest estimate, say, 2,300,000 of them in the whole body, we have a total length of tubing in the *perspiratory system alone* of 153,000 inches, or about *two and*

a half miles! Such a wonderful, complex, beautiful, and extensive system of drainage, has surely been created for a correspondingly great and beneficial purpose! And this purpose is the continuous carrying away from the animal organism of matters which, if allowed to remain, would prove highly deleterious to it in many ways. The orifices of these tubes (the "pores"), at the surface of the skin being, as we have seen, of great minuteness—not larger indeed than the 1-560th of an inch in diameter—it requires no great effort of the mind to perceive how very liable they must be to become blocked up, and how necessary, therefore, it must be for us to direct our careful daily attention to the thorough cleansing of the body, if we are to maintain the pores in an open, and therefore in a natural condition! One system of drainage in the human body alone, consisting of some *two and a half millions of pipes*, and measuring some *two and a half miles in length!* Think of this, and of the baneful effects upon the delicate organism of the body of allowing the arrangement to get out of order, by the outlets of this system being allowed to get blocked up! How *can* people be healthy in whom such a disordered condition of matters obtains? The indication is obvious, and the conclusion irresistible—"WASH AND BE CLEAN!"

We may apply the same observations also to the other system just mentioned—namely, that concerned

in lubricating the surface of the body with the oily matter secreted by the sebaceous-glands, the purposes fulfilled by this system being also of very great importance. Without the presence of this peculiar substance, or of some similar unctuous matter upon the surface of the skin, the atmospheric moisture, which is always present in greater or less quantity, and particularly in the air of these islands, would exert a far more deleterious influence upon the human economy than is possible when the skin is protected in the manner named. Water and oily matters have no affinity for each other, as everybody knows: and so long as the skin is kept constantly covered with the oily secretion provided for it by nature, the body is to a great extent preserved from that dampness which, without the repelling effects of this secretion, would inevitably settle upon the skin, and be an endless source both of discomfort and, may be, of actual illness. Now, by the habitual neglect of cleanliness, the minute orifices leading from the sebaceous-glands—as in case of those leading from the perspiratory-glands—do, from the accumulation of dirt, almost certainly become occluded: and thus, though the secretion be properly formed by the glands, and passed through the ducts in an outward direction, the former cannot make its escape to the surface of the skin, which is therefore left without that protection destined for it by the laws of the

animal organism, and more or less suffering and disorder is the sure consequence.

Besides, when the lubricating matter which is destined to discharge its duties upon the *surface* of the skin is kept imprisoned *within* it, the latter begins to take upon itself unhealthy action. And this is easily explained; for the skin is now loaded and clogged with matter which has no business *in* it, and which consequently proves to it a source of more or less irritation and annoyance. One result of this is, that the skin is prone to become disfigured with pimples and blotches, or to manifest an unhealthy colour, etc. And the system at large eventually sympathises with it, becoming embarrassed with a sense of weightiness and oppression quite foreign to it. Indeed, one disordered function leads to another, and in the neglect of cleanliness a chain of evil consequences becomes forged, the first link being constituted *by* that neglect, and the last ending in—no one can easily foresee what.

How necessary it is, therefore, for the above reasons that every care and attention should be directed to the very important duty of preserving the skin in a condition of constant cleanliness! And many other reasons might be advanced connected with this particular part of our subject,—as the loss of suppleness which the skin undergoes when long neglected,—to show the necessity which exists for

keeping it in a state of purity, and freed of all extraneous matters; but the foregoing will, it is hoped, prove sufficiently convincing.

Fourthly—BATHING PROMOTES INCREASED CIRCULATION OF BLOOD THROUGH THE SKIN.

After the bath, and especially after the body has been well rubbed with towels, which is always done, or should be, immediately after bathing, and particularly after immersion in *cold* water—then follows what is termed the

REACTION.

This consists in the rebounding of the blood to the surface of the skin, after being suddenly driven inward by the contraction of the cutaneous vessels, through the agency of the cold water. These vessels not only regain their previous fulness, but become wider and still more full, and consequently admit more blood than before: at the same time, their contractile function is aroused into increased energy. And numbers, moreover, of the more minute vessels which but for the bath and the subsequent friction would have continued to pass forward the blood in a comparatively slow and sluggish manner, have likewise become stimulated into increased fulness and activity. And it thus comes to pass that the whole cutaneous circulation is now imbued with a healthy, vigorous nimbleness of motion, to which, since the

days of childhood, it had previously been a stranger. The advantage of all this is that the skin has, as it were, a new life instilled into it, its functions are now discharged with greater ease and with more celerity, it is permanently warmer, and in a corresponding degree better able to withstand the calls made upon it by sudden changes of temperature. As a consequence colds, and many of their most common accompaniments, such as bronchitis—to which the inhabitants of this country in particular are so markedly prone—are made much less frequent; and far less care and pampering of the body with fires, clothing, and sundry hot condiments, is needed. Again, that portion of the blood which has been thus enticed to take up its abode and discharge its functions more frequently *at the surface* of the body, cannot at the same time, of course, be also present in the various organs and parts contained *within* the body. And thus the probability of such internal engorgements, as congestions and inflammations, ensuing—diseases which are of general and incessant occurrence in a cold, damp, changeable climate like ours—becomes proportionately lessened; and many other dreaded and dangerous ailments are correspondingly reduced in frequency.

Moreover, a marked reciprocity of action is found to obtain between the skin on the outside, and two very important organs, the kidneys, on the inside, of

the body. When, for example, the skin becomes chilled and cold, as it often is in winter, much, sometimes all, of its secretion previously spoken of, becomes arrested; a circumstance that would prove highly injurious and full of danger to the animal organism, were it not for the fact that the kidneys at once supply its place, and vigorously take upon themselves the functions thus temporarily suspended by the skin. And again, when the functions of the skin are in an unusually active condition, as in summer and hot weather, or during unusual physical exertion, at which time a great amount of moisture in the form of sweat is evolved at the surface of the body, the kidneys become relieved of much of their customary work, and begin to enjoy for the time being a much-needed holiday, a matter of no small importance to these poor over-worked organs, which in this day of rampant dram-drinking, have much rough and incessant toil to perform. So also, when the kidneys from any cause get out of order, as they often do, particularly in certain constitutional diseases, on which occasions their ability to discharge their customary functions is more or less impaired, the skin may be made to take upon itself a great part of the duty naturally appertaining to these organs—a knowledge of which fact is, by the way, frequently taken advantage of by the physician.

Now, applying this knowledge to our subject, we at

once perceive the great advantage of preserving the skin in a cleanly, healthy, and therefore active condition, by frequent bathings and subsequent frictions. We see that it prevents the individual from becoming morbidly susceptible to the operation of cold; it relieves the internal organs of a repletion of blood; it prevents, in great measure, the lungs and breathing tubes from becoming congested or inflamed, thus rendering bronchitis, coughs, etc., proportionately less common; it permanently relieves the kidneys of undue pressure, by causing the skin to take upon itself the work primarily designed for it by nature, and thereby allowing the kidneys to perform with greater ease and more effectiveness their own assigned duties. And thus the whole human machine is placed in a state of action the most favourable for the discharge of its multifarious functions, which are now performed with comparative ease and thoroughness, a condition of matters, other things being equal, the most favourable for prolonging the existence of the individual. The mind and intellectual faculties likewise partake of this augmented physical functional activity. There is less complaining of nervous disorders, such as nervous exhaustion, disinclination to exertion, nervous, as well as other head-aches, watery-eyes, yawnings, sighings, general *ennui*, neuralgic affections properly so called, as sciatica and tic. The labourer is capable of more physical work,

the brain-worker of more intellectual thought and power; and altogether life feels now as if worth living for. Our condition, physical and mental, is now one of energy and decided enjoyment, the body revels in a sensation of glowing, invigorating warmth, and, in a word, we at last *live*, not merely *exist*.

CHAPTER IV.

THE COLD BATH.

THE temperature of the cold bath is usually reckoned from 33° F. up to 55° F.—that is, from one degree only above the freezing point of water. It may, of course, be either a bath proper, fixed or built in the house, or a separate private or public edifice, constructed for the express purpose ; or it may be a lake, a river, or the sea. Along with the ordinary cold water bath may for convenience sake—since in both the water used is of the same temperature—be included the cold SHOWER-BATH, which consists simply in an arrangement whereby the water is made, at the will of the bather, to gently fall upon him in the form of a great number of fine streams, something like an ordinary shower of rain. The most common house-baths are usually made of tinned or galvanised iron, painted inside to represent marble, or of various kinds of wood, and are generally immovably fixed in a small room—hence termed the Bathroom ; but as often it is made sufficiently small and handy to be easily portable. The former class—the permanently fixed—are much to be preferred ; as amongst many other reasons that might be adduced in their favour is the obviously convenient one that they can be much

more easily supplied with water, both hot and cold, by means of ordinary piping. There is, however, one strong objection to them as they are fixed at the present day in perhaps ninety-nine cases out of a hundred, and that is, the highly imprudent and often dangerous method of placing them in the same apartment as the water-closet. Setting entirely on one side all sanitary questions, which are, however, of the most weighty consideration, nothing could be more objectionable or more distasteful than such an association. The bathroom should be an entirely separate apartment, and everything in direct connection with it should be of the most pleasingly suggestive description. When the means of the proprietor will admit of it, the walls may be of glazed porcelain slabs, artistically arranged, or some such material equally impervious to moisture. The floor similarly laid, with the joints cemented, or laid with concrete, and afterwards covered in appropriate places with matting, made of india-rubber or like substance, and of an open or reticulated pattern, in order to allow the water to drain through on to the water-tight floor. The windows may be ornamented with stained glass, and flowers placed growing on the sill, or arranged to hang gracefully down from the roof. In a word, the Bathroom, and all in immediate connection with it, should be made as cheerful and enticing as circumstances will admit—a place of pressing welcome, and



BATH ROOM.

Taken by permission from "The Art of Bathing," by Dr. Percy Wilde.

of happy, pleasing memories. Placed at the head of the bath, and within easy reach, is the handle or other communication with a bell, which may be rung in case of emergency by the person in the bath.

The Shower-bath, in most cases, is fixed directly over the ordinary bath, though it is to be had separately. In the former case a string hangs from the bath above, to within a convenient distance of the person standing below, and on the communicating cord being pulled, the water descends and deluges the bather with an invigorating shower, the refreshing effect of which is felt for many hours after.

CHAPTER V.

THE PRECAUTIONS TO BE OBSERVED
IN COLD BATHING,
AND CONTRA-INDICATIONS THERETO.

THE precautions to be observed and the contra-indications to bathing—that is, those bodily conditions under which more than ordinary care is required in bathing, or where it may be scarcely desirable at all, these remarks having especial reference to immersion in *cold* water—may be considered under the four following aspects, namely: I.—With regard to Age. II.—Sex. III.—Certain Diseases or Functional Disturbances; and IV.—The condition as regards Bodily Fatigue, Temperature, Meal-times, etc.

I.—AS REGARDS THE AGE OF THE INDIVIDUAL.

It may be observed that neither the very young nor those much advanced in years are, as a rule, capable, without less or more danger in some respects, of withstanding, for even a comparatively brief period, any very marked diminution of their normal temperature: and chiefly because of the lack of power in them to subsequently get up a sufficiently vigorous *reaction*. This remark applies with more especial force to the elder extreme of life. In the aged the vascular

system, as, indeed, the whole bodily organism and functions, has become weak and feeble. It is less able to bear any unusual strain that may be put upon it, or, having sustained it, it is subsequently less able to make a rebound and throw off the effects of the increased pressure, than when in the full vigour of youth or manhood. One consequence of this is that those engorged conditions of organs and parts within the body, as congestions and inflammations, which we have previously spoken of as being best guarded against by bathing, are, under these circumstances, liable to be engendered by that very act, if carelessly and recklessly performed. And thus it happens that the custom which we have hitherto lauded so highly may here meet with our condemnation. It is the loss of heat in these cases, and the subsequent inability on the part of the aged to readily regain their lost temperature, and to get up a sufficient degree of reaction, that causes all the mischief.

Another danger to the aged arises from the fact that in them the blood-vessels, like the rest of their body tissues, have lost their wonted strength. They are more fragile, less elastic, and more easily ruptured than in persons of fewer years; so that any unusual or sudden pressure brought to bear upon them, as happens by the precipitate immersion of the body in cold water, the blood in such cases being suddenly driven from the surface into the interior of the body,

renders them liable to this accident in an especial degree. But the chief danger, however, is in the vessels of the brain, the rupture of which, and the consequent outpouring of blood upon or within the nervous mass (*apoplexy*), is attended with such dangerous and often fatal results. Even in those cases in which none of the untoward accidents just enumerated ensue, there are left behind feelings of discomfort, chilliness, creepiness of the skin, shiverings, cold feet, headaches, colds, and coughs, which in a young man would be thought but little of and be easily cast off, but which are often of grave importance to those far advanced in life.

For the aged, therefore, bathing in cold water cannot as a rule be advised, nor in water under a temperature of from 80° F. to 90° F., nor for a longer period at this temperature, even, than two minutes—that is, there should be a mere *dip* or two only. Constitutional powers vary so much, however, even in different persons of the same age, that it is impossible to lay down one general rule for guidance on this point. Doubtless, some men, older than others by ten or more years, are better able to get up reaction after a cold bath than many of their younger brethren. But bearing in mind the general weakness and fragility of the whole vascular system, as the heart, but especially the arteries, in nearly every elderly person, they should certainly be dissuaded from attempting to practise

cold bathing. No harm will, however, follow free sponging and washing the body with water at a temperature, say, ranging from 65° F. to 75° F.—that is, water “with the chill taken off,” provided the skin be immediately afterwards freely and briskly rubbed with a coarse, warm towel, and a cup of warm coffee or cocoa be taken after dressing, previously to a walk or other exercise. By the adoption of such a plan all the evils previously indicated, as colds, and congestions, will be commonly avoided, as well as the dangers just enumerated and spoken of as attending the indiscriminate use of the cold bath.

While speaking strongly on these dangers to the aged, it must be borne in mind that use or habit has much to do with the subsequent power of withstanding the untoward events just enumerated. A man who has all his life been accustomed to the habitual morning dip, appears to be able to despise alike both cold water and the cold piercing blasts of winter.

I have in my mind at present a gentleman aged 86, who habitually, summer and winter alike, takes his cold bath on first rising in the morning; and he has never yet suffered from any complaint that could fairly be attributed to this daily practice of cold bathing. He never wears an overcoat in snow or rain, and no muffler; and he is able to take his daily morning walk of at least three miles, no matter what the weather is like. But while this is the case in one

who has all his life been accustomed to the cold bath, the result would be very different in other cases, where such a practice had been habitually neglected.

On the contrary, the very young, though not able to withstand a prolonged application of cold, are yet, *when not weakly*, decidedly benefited by immersion *for a short period* in cold water. With them, indeed, the very opposite condition of the heart and arteries obtains to that which is found in old people. In the young, the heart is new, strong, and vigorous; the arteries are yielding and elastic; they rebound with great power and energy; and there is no danger of their becoming ruptured. The Esquimaux, indeed, rub their new-born babes with snow, and snow, moreover, which, for lowness of temperature, is unknown in these islands; *but the application is only momentary*, and hence reaction sets in—as it need do under such extreme circumstances,—with great energy and force, and no harm is done. But how different would be the case were the child exposed for but a few minutes only to a cold so great! It is not, therefore, the cold, *per se*, that proves so mischievous, but the length of time to which a person is exposed to it, and the difficulty in such cases of getting up reaction. Imprudent bathing of delicate children in cold water, however, often leads to most undesirable results; and hence, in cases of doubt, it is highly advisable, before the adoption of cold bathing,

to obtain proper medical advice. Great errors are often committed by parents and guardians, under the idea of "strengthening" their weakly children by the cold bath, when such a measure is the very opposite of desirable in many cases, and sometimes leads to incurable mischief.

II.—AS REGARDS THE SEX OF THE INDIVIDUAL.

The female sex is, in general, less able to sustain the prolonged application of cold, as they are of other strong external agencies and influences, than their sterner brethren. Their bodies are constructed upon a more fragile and yielding foundation; their whole construction, mechanical and physiological, is built upon softer lines, of more delicate frame-work and material; their nervous system is more finely strung; and add to this certain recurring physiological functions peculiar to them, and we can then readily understand how carelessness, and the neglect of special precautions, never necessary to be thought of by man, may prove of grave and even irreparable injury to the gentler sex.

The *general* lesson to be learnt from the above considerations is, that in bathing by the female sex, either the water should, as a rule, be warmer, or that the period of immersion should be shorter, than in the case of males:—that the subsequent exercise for the restoration of warmth and the proper degree of reaction,

—since the physical exercise cannot be more brisk—should be more prolonged. Besides which, it is desirable for those with weak hearts, and in whom a comfortable feeling of warmth is difficult of attainment, to partake of a cup of hot tea or coffee as soon after the bath as possible, the body being in every case, of course, well rubbed—and if assisted by a friend the better—with dry coarse towels directly after leaving the water.

The *special* lesson to be borne in mind by the female is, that in contemplating the question of taking a cold bath, particular care should be exercised that it do not happen at, or about the time—within a day or two—of *the usual monthly disturbance*. So many and so serious are the evils, which cannot be here specified, that have resulted from the neglect of this precaution, that the lesson cannot be too strongly impressed upon the female mind. It is far preferable, and for several very important reasons, that *warm or hot* baths should be made the rule at these times, a temperature, that is, varying from 95° F. to 105° F. or more, according to varying circumstances, and taken at bed-time, sponging the body with tepid water, and applying brisk friction on rising in the morning.

Pregnancy is another condition under which great care is desirable, and occasionally imperative, in bathing in cold water. This can be performed with

safety only during the earlier months, say the first half of the whole period, but not always then ; and after this time it cannot be deemed generally safe to bathe in cold water. There are many striking exceptions to this rule, though these do not affect the general statement.

III.—AS REGARDS CERTAIN DISEASES OR FUNCTIONAL DISTURBANCES.

Under this head may be enumerated very numerous conditions, in the presence of which it is not desirable to practise cold bathing ; but we shall confine our attention chiefly to some of the most prominent and common of these. A few of them, such as weakness of the blood-vessels as it is found in old people, and certain periodical changes and conditions of the system appertaining solely to the female, have already been brought before the reader, and need not therefore occupy our attention here. What remains will be treated of in as brief a manner as possible. And first in the category may be mentioned—

Feebleness, and Diseases of, the Heart.

From what has already been stated in regard to the desirability of *reaction* being fully and thoroughly established immediately after immersion in the cold bath, it will be readily understood why weakness of the heart, especially if this be much marked, should

be considered a contra-indication to its adoption. In such circumstances the distress to this organ, which is, perhaps, already over-burdened, even with its ordinary duties, occasioned by a sudden rush of blood to it, and therefore of increased work, must, we should imagine, be very much augmented. And such is the fact, and indeed to so great a degree as, at times, to seriously injure the subject's health, and even to result, either suddenly, or within some not very remote period, in his death. To use a familiar simile, If the load prove too heavy for the horse, the labour will not be lessened by increasing the weight, but will rather stop the moving power altogether. And it is the same with regard to the heart in the cases before us. The organ has already as much to do as it can do with comfort, and the conservation of the little power it has at its weak disposal is enough for it, without having the burden increased to double or more, and a burden moreover applied suddenly, like the fall of a roof, as happens from the shock of the cold bath. But even if this particular danger be safely over-passed, there are yet, in the subject of a feeble heart, the various troubles and trials incidental to a lack of proper *reaction*, and which we have previously and fully discussed.

In cases, therefore, of heart disease, or of feebleness of its action, or of liability on the part of the subject to palpitation of the organ, or to sudden attacks of

pain in its immediate vicinity, or in diseases of the arteries, the cold bath should be decidedly shunned, or certainly not used without the previous sanction of proper medical authority.

In cases of *special liability to internal congestions and inflammations* great caution is required in using the cold bath, as the rush of blood from the surface to internal parts, which we have seen always accompanies immersion in cold water, is often enough to turn the scale in a case just wavering between the healthy action of an organ predisposed to blood-engorgements, and the lighting up in it of those morbid processes just mentioned. In a person, for example, prone to attacks of inflammation of the lungs, or of the kidneys, or in whom an attack of this kind has previously taken place, that particular organ is generally thereafter more readily affected with inflammation than when it was first attacked with the morbid process. So that the operation upon these subjects of any strong or sudden strain, as in the sudden cooling of the skin by the application of cold water, by which the blood circulating in external parts is suddenly driven inwards, is not unattended with risk, particularly in those with feeble hearts, or who have but recently recovered from an internal inflammatory attack. So, also, with regard to persons of a consumptive tendency, but especially when the circulatory system is, as often happens in these cases,

weak and excitable, a sudden rush of blood to the lungs might be the determining cause in awaking in these organs the flame which has so long lain dormant and smouldering. In decided and advanced cases of consumption the use of the cold bath would be the height of imprudence, and might lead to spitting of blood and other alarming consequences. Such subjects, though deriving benefit from the *local* application of cold water, as by sponging the chest only, always taking care that the part be thoroughly rubbed with towels immediately afterwards, are not fitted for the *general* application of the cold bath.

During Attacks of Diarrhœa, in which there is always more or less congestion, and sometimes inflammation of the intestines, the cold bath cannot, as a rule, be recommended. Occasionally, indeed, diarrhœa has been brought on by the act ; and though at times the cold bath appears to be beneficial in this complaint, yet it is only in such cases as arise from the lack of general tone in the subject, to whom cold bathing, from its general tonic effect, acts as an astringent to the whole system.

Rheumatism, or the "Rheumatics," is one of the complaints which is occasionally benefited by cold sea-bathing ; but as a general rule, and a rule that is seldom found not to apply, the cold bath operates injuriously in these cases. The particular circumstances or conditions which render it advisable or

otherwise, in this inflammatory affection, are so numerous and complicated, that it is far preferable in such cases to seek properly qualified medical advice upon each particular case, before rashly undertaking the experiment.

Epilepsy, or Falling Sickness, and certain other nervous affections require the ever-present care of a friend in all cases of bathing, whether cold or heated; so that in case of an attack whilst in the water, from one or other of these convulsive diseases, the subject may be at once rescued from the danger of drowning. And this remark applies with particular emphasis to the use of the *cold* bath, when the shock to the system is often so great as at once to bring on the fit. In some particularly nervous persons, the shock of cold water operates so powerfully upon their finely strung nerves, and through these upon the heart, that this latter organ has been known in such cases to cease its beating, and the bather to cease to live. In persons, therefore, of this class, every care should be exercised before using so potent an agent as the cold bath, or before the immersion of the body in cold water. In cases of doubt, the assistance of a medical adviser should be obtained.

So, also, with regard to a person who may be *the subject of Cramps*. Such a one should never bathe alone, nor without previously warning the bystanders, or his fellow-bathers, of his particular proneness to

these attacks. In some people, the application of any uncommon or powerful stimulus acts at once upon them like a galvanic battery, throwing their limbs into helpless and violent contortions; and it thus becomes a question of great moment whether such subjects should bathe at all in water of a temperature much below that of the blood. It is quite certain that very many of the lives annually lost whilst bathing at our sea-side health resorts arise from the supervention of Cramp; and it is much to be feared that many of these have received on previous occasions full and timely warnings of their particular liability to this kind of attack, but have failed to be guided in the matter by such warnings.

The whole of the previous observations on "Contraindications" to the use of the cold bath apply also, though in perhaps a less degree, to the use of the cold shower-bath, and may, for practical purposes, be read in connection with the latter.

IV.—AS REGARDS THE CONDITION OF THE PERSON WITH RESPECT TO BODILY FATIGUE, TEMPERATURE, MEAL TIMES, &c.

In extreme bodily fatigue, when all the organic functions and vital powers are at a low ebb, when life is, as it were, just *vegetating*, when all is in a state of relaxation, the heart beating feebly, the circulation pacing its round in a very sluggish, half-stagnant

manner, and the general powers of life are prostrated, it would be most imprudent, almost suicidal, to take a cold bath. For the probability is that, in such a state of matters, the shock of the bath, instead of rousing up the strength and energies of the individual, would have the very contrary effect, and would act as so much more dead weight to the already overburdened system. If, after the expenditure of an undue amount of physical force, the person contemplates a cold bath, it is far better to take it at once before the physical excitement of labour has worn off, and all has become utter fatigue and relaxation. It is *the resting and the waiting* till the system *becomes* calmed down, and till all is in a condition of quiet and stillness, that a cold bath in such cases does harm. If your work or exercise has been overfatiguing, and you wish to be benefited by a cold bath, take it at once, and do *not* first sit down to rest—bathe without loss of time;—and after reaction has been established, *then* take your rest, or leave the bath alone till the system has recouped its lost powers. In this way, many of the evils already spoken of as resulting from the operation of cold upon a person possessed of a weak heart, or upon one predisposed to internal inflammatory attacks, will be best avoided, as these conditions will certainly be most encouraged by the opposite, and, we are afraid, by no means the unusual plan. When all the forces of the

body have been expended in some unusually severe or prolonged physical task, it is placed in a similar condition to the electric eel, which, having spent all its electric force in some vigorous attack upon an enemy, has, subsequently, to rest for a shorter or longer time, according to the amount of energy it has lost, before its body can again become sufficiently re-charged with that force; and till this rest is obtained all attempts to call out more force are but so many fruitless and injurious efforts. Apply more weight to an animal already over-laden, and it is not likely that its physical powers will be strengthened or benefited by the act. This advice will be new to many, and will no doubt cause no little astonishment. When we hear of certain people being made ill by cold bathing after they had been freely perspiring, or indulging in violent exercises, as foot-racing, rowing, violent running, as in the game of cricket, and so on, it was not because they *immediately* thereafter took the plunge, but because they *waited*, and, perhaps sat smoking at the edge of the water (as I have often seen them) till their bodies were cool. It is the latter practice that works the mischief, not the *sudden cooling by the plunge*. This fact cannot be too forcibly impressed upon the attention of bathers, and hence the reason of my having particularly dwelt upon it.

With respect to the Temperature of the Person.—Do not bathe while the body is cool. A cool con-

dition of the body is, as we have just pointed out, regarded by the vast majority of persons the best and safest time for taking a cold bath. The contrary is, however, the fact ; but very emphatically is it so when a cool condition of the person is combined with physical fatigue, as happens after severe bodily exercise in hot weather. It is, we repeat, a great and common mistake to walk slowly and leisurely about, much greater to sit down on the brink of the water, as on the sea shore, in order to allow the body to cool, before taking the bath. For in these circumstances, those very conditions of the system already so frequently pointed out, and which we found to be the very opposite of safety to a person about to take a cold bath, will be thereby probably induced. A certain vigour or energy of the vital powers is necessary to withstand the *shock* of cold bathing, and quite as necessary, if not more so, to establish full and thorough *reaction*, the importance of which latter we have already seen to be so indispensable. No danger arises from the body being *over* heated, or being in a state of perspiration even, *provided the bath be taken without delay*, that is, without waiting *for the body to cool*. The amount of physical activity in operation within the system is, in such cases, so great, that there is enough and to spare, both to sustain the immediate shock of immersion, and to subsequently get up a due intensity of reaction ; but by waiting

till the body cools before taking the bath, nearly all this energy has become dissipated ; and this tends to the results previously enumerated. The importance of this point is my reason for again calling the reader's attention to it.

With respect to the Meal-times of the Bather.—Bathing immediately after food is to be condemned, as, amongst other evils which it occasionally induces, it interferes with the process of digestion, which at such a time is in full activity, and, as a consequence, gives rise to many troublesome and annoying disturbances. Amongst these may be mentioned, sourness or acidity of the stomach, pain in that organ, sour eructations, flatulence, heartburn, vomiting, headaches, dizziness, and, in delicate subjects, perhaps distressing attacks of palpitation, faintness, and even complete swoonings. Immediately after food, and especially after a hearty meal, all the powers of the system are, as it were, concentrated upon the act of utilising the alimentary contents of the stomach : and for this purpose many different processes, some of which are of a complicated nature, and which do not at all brook interference, have to be performed. Forcibly take away the attention of the organism from this important operation to others which have no direct concern with it, and you leave the digestive processes to their fate, and suffering of various kinds must inevitably follow. The heart, and the vascular system of the stomach

and digestive tract, the nervous influence, at this time especially energetic in the same parts, the various glands, which are also now roused into vigorous action by the presence of food in the stomach, and which are concerned in secreting the various fluids necessary to accomplish digestion, besides a multitude of other glands, are busily at work absorbing such portions of the food as have been reduced to the proper consistence for being taken up into the system ; all these important structures and agencies become, by the act of bathing, but particularly by cold bathing, rudely arrested in their several respective occupations, the digestive processes are for the time being brought to a standstill, and many or all of the evils just pointed out is the almost certain result. The blood, and the energy hitherto devoted to the assimilation of food, now becomes violently directed to the surface of the body, as a result of the causes recently brought into operation there, that is, they are now employed in the work of *reaction*, and the assimilative processes are left to their fate. The more powerful the interfering cause, the more completely are these digestive processes left in a neglected or helpless condition ; and there are few which act with more vigour and effectiveness than immersing the body in cold water.

Do not bathe, therefore, with a loaded stomach. Take the bath before food, or wait, at any rate, until digestion is nearly completed.

CHAPTER VI.
GENERAL INSTRUCTIONS AS TO
COLD BATHING.

IN addition to what has been advanced in the previous pages, but more particularly under the head of "Precautions" and "Contra-indications to Bathing," there yet remain a few considerations to which it is necessary to direct our attention : such as I.—The Mode of Entry into the bath ; II.—The Length of Time to be spent therein ; III.—The subsequent line of conduct to be followed ; and IV.—The Frequency with which it is desirable to take it. One or two of these points will be dismissed in a few lines, but the others require a little more attention. Taking up the questions in the order just given, we have :—

I.—THE MODE OF ENTRY INTO THE BATH.

Various methods are adopted by different people of entering the bath, the particular mode being governed chiefly, I believe, by the degree of timidity or confidence respectively of the bather, and not from any preconceived or determined plan on his part as to how he will act in the matter. Those who are naturally of a timid or doubtful disposition, and are afraid of the *cold*, or who have not yet sufficiently

learned by experience the buoyant properties of water, perhaps pardonably hesitate to adopt what must appear to them the desperate course of *plunging headlong into the water*. And they accordingly stand or sit on the brink, with first one foot in the water and then the other, till by degrees they finally get in, perhaps, a good part of their bodies ; or, it may be, by great chance the whole, and even occasionally—though in a spirit of desperation—getting as far as to dip their heads beneath the surface for an instant of time. There are others, again, who probably are ashamed of being classed with the foregoing, and who, though afraid of being thought cowardly in this matter, are yet not altogether free from fear, and succeed, perhaps, in mustering up sufficient courage to *walk* into the water, without much apparent hesitation. Whilst a third class, whose personal acquaintance with bathing has taught them to feel at home in the water, and to look upon it in the light of an old and valued friend, do not “show the quality of lingering,” but take a headlong plunge into the sparkling fluid, and are at once in a concentration of enjoyment, their more hesitating companions, meanwhile, still shivering on the brink with, perhaps, one toe in the water.

Now, bearing in mind what has already been advanced on cold bathing ; and again, in “Contraindications” to it, we shall have no difficulty in forming a conclusion as to which of the foregoing

methods is the right one. We have seen how undesirable and injurious it is to bathe whilst the body is cool, and how necessary it is that bathing in cold water should be followed by a due amount of reaction. But by neither of the two first methods of entering the water can the latter condition be fulfilled, whilst it presents in great force an opportunity for the evils in question to develop themselves. For the cooler the body, the more will it approach in temperature to that of the water, the less, therefore, will be the shock to the system, the less, also, the reaction, and hence the greater the probability of the evils manifesting themselves which have so often been referred to. The proper way is to immerse the whole body, suddenly and simultaneously, giving the head by preference the first contact with the water. In other words, go into the bath with the time-honoured headlong plunge, never sitting or lingering on the brink with the view of allowing the body to cool, or for *fear* of the water. If a feeling of chilliness is felt at this time, it is far better, as we have previously more than once observed, to defer the bath, and to take a brisk walk, or perform other physical exercise till a sensation of comfortable warmth is experienced, after which, quickly undress and at once take the plunge. Also, in walking to the water, if the distance to it be not sufficiently great, or the temperature of the air not sufficiently high to

induce a glowing sense of warmth in the body, then walk to the bath all the more briskly, that the same result may be achieved in another way. The importance of these steps must be the excuse offered for again bringing the matter before the reader's notice. The Romans, we have seen, were fully alive to the necessity of having the body in a sufficiently warm condition; for they had a hall specially set apart for various exciting exercises, which the would-be bather was required to practise previously to his entering even the *hot* room. Much more necessary is it, therefore, that this active and warm condition of the body, and the full activity of the circulation should obtain when it is the *cold* bath that is to be taken.

II.—LENGTH OF TIME TO SPEND IN THE BATH.

Of all the numerous differences pursued by people in cold bathing, none perhaps is so marked and varying as the *time* spent by different persons in the bath. A few, for example, stay in the water for only a very brief period, but these are in a decided minority; whilst the overwhelming majority never know, apparently, how great a time to remain there. The latter, learning in the course of a few minutes' immersion that the coldness of the water no longer causes them to jump about, or perform other bodily exercise whereby the activity and vigour of the circulation is kept up, begin to practise various kinds

of indulgences, such perhaps, as floating on the surface, or allowing others to pull them along, boat-fashion, they themselves making no effort of any kind, but enjoying simply the sensation of being dragged through the water ; and sundry other kinds of passive by-play equally objectionable from a sanatory point of view.

By again applying the principles already laid down, respecting the necessity of due *reaction* being promoted after cold bathing, we shall perceive that the plan pursued by the former and minor class of bathers is more likely than the other to be the right one, for we have seen that it is not so much the *degree* of cold, as the *length of time* the body is exposed to it that proves injurious. If this time be too prolonged, it is well nigh impossible to fully get up that all-important physiological process—*reaction*, which has now been so frequently forced upon the reader's attention that its necessity after cold bathing will now, it is hoped, be fully impressed upon his mind. It matters not in how praiseworthy a manner the bather enters the water, if he subsequently so conducts himself in it, either as regards time or behaviour, that the same objectionable results are brought about as by lingering too long on the brink.

The factors governing the question of actual length of time to be spent in the cold bath are so many—such as constitutional powers of resistance on the part of the bather ; the presence or absence of any

special disease or weakness, particularly as regards the heart; the state of the body as regards fatigue, temperature, etc., previously to entering the water; the method adopted of entry; the temperature of the water, and of the air; the degree of the bather's activity during immersion; the question as to whether the water be in motion, as in a flowing river, or at a stand-still, as in a bath proper or small lake—that one fixed period of time beyond which it is not desirable to prolong the immersion, cannot be assigned. The *great principle* which should guide the bather can, however, be easily stated, and borne in mind: it is NEVER TO STAY IN COLD WATER AFTER THE COLDNESS BEGINS TO BE NO LONGER FELT. When this condition of matters arises it is then time to leave it, and without more delay. Other things being equal, the bather will be able to stay in the water all the longer the more active his movements are, as by swimming, etc., while in it; but with the weakly, much physical exertion is, of course, beyond question, and these should accordingly be guided more by the temperature of the water, though it is a safe practice with such persons to take only two or three dips over-head, and then quickly dry and dress.

III.—WHAT TO DO IMMEDIATELY AFTER THE COLD BATH.

The first thing, of course, is to dry and thoroughly

rub the whole body with warm, dry, coarse towels, paying particular attention to the head, the hair of which should be made as nearly dry as possible, and the feet and lower limbs. It is also advisable to give *early* consideration to the latter, getting them encased as speedily as possible in dry, warm stockings, and slippers or boots, after which the rest of the body may monopolise the bather's care. Also, when possible, if the bath be in the open air, as at the sea-side, or on the banks of a river, the drying and rubbing of the body, as well as the subsequent dressing, should be performed in some place protected from the wind or currents of air; and the quicker all this is accomplished the better.

The next thing to be done is *to immediately take walking exercise*, briskly at first, and prolonged so long as necessity calls for it, that is, until a comfortable sense of glowing warmth is established throughout the whole system, until all chilliness, or tendency to it, has entirely disappeared, and especially till the feet feel thoroughly warm and comfortable. In the case of those in whom symptoms of reaction are slow to develop themselves, or who possess naturally weak hearts, and all persons having a delicate constitution, it is advisable previously to the walk to partake of a cup of hot coffee, or tea, etc., to be drunk quickly, so as not to interfere with the walk, which should in all cases be taken, and as soon after the

bath as possible. The young and active are in the habit of taking a smart run after the bath; and this, when it can be done, is a very good plan to follow, if care be taken not to adopt this method while still naked, as some do, but first of all to protect the body from the cooling effect of the air, which always accompanies quick motion through it. Ladies who have long hair should allow this to flow in a loose manner down the back, till it becomes thoroughly dry. This does not interfere with the walking exercise, and is, for many reasons, to be highly recommended.

IV.—THE FREQUENCY WITH WHICH THE COLD BATH SHOULD BE TAKEN.

The chief considerations governing this question, such as age, state of the internal organs, the general health or robustness of the person, his powers of getting up reaction, etc., have been fully considered under "Contra-indications to the Cold Bath," and the question has, moreover, been answered in other places, both by implication and direct statement; and to these the reader is again referred for information on them and similar points. It now only remains to be added that, in the absence of the various conditions referred to, and with the cautions regarding its use already laid down, the cold bath may be taken daily—every morning, directly after getting out of bed. And not only in summer, or warm weather, but,

if the bath be within the house, or similarly protected from the weather, throughout the winter months also.

To those, however, who are strangers to this custom or who adopt it only on rare and distant occasions, as in the height of summer, it is recommended to first begin its regular use during the hot season. Or, if it be determined to begin it in winter, the water should be previously heated to a few degrees higher temperature—to about 60° or 65° F.

When the heart or other internal organs are known to be weakly, or any other special contra-indication to its use exist, it is advisable, for the time at least, to forego the cold bath, and practise, in its stead, cold sponging of the whole body. No fear need be entertained of catching cold from the adoption of either of these measures, particularly if the instructions already given respecting the subsequent line of conduct to be followed after the cold bath, be thoroughly carried out. On the contrary, *the body is more effectually protected from attacks of this nature by cold sponging, or the regular use of the cold bath, than by any other known means.* And so soon will the habitual bather find out the difference in his new and constant glow of health, and in the increased elasticity of his spirits, that he will with great difficulty be persuaded to relinquish ever after this most powerful adjuvant to the pleasures and blessings of his life.

CHAPTER VII.

THE HOT-WATER BATH: THE VAPOUR
BATH: THE HOT-AIR BATH.

OF the various kinds of baths enumerated in the chapter on "Classification of Baths," we need now treat only of the HOT-BATH (that is, the *Hot-water* bath), the VAPOUR-BATH, and the HOT-AIR or TURKISH BATH. These owe their respective properties or powers chiefly to the *temperature* of their respective media. They might, therefore, almost be considered together. The most powerful of the three, in a therapeutic sense, is the last, and of this we will speak first, namely :—

THE HOT-AIR BATH.

The two former are, it is true, as well as the last named, *hot baths*, and act chiefly by the warmth they impart to the body. And the water or vapour respectively of the two former can be applied in as hot a condition as may be desirable, as in case of the latter; yet these are both *wet* baths, whilst the latter is, *par excellence*, a *dry* one. And as it is now pretty accurately determined by experiments that the skin does not, as was formerly supposed, readily absorb the liquid medium with which it may be surrounded, by which means the liquid bath was

originally supposed to exert its beneficial action upon the system to a considerable extent—and as, thus placed or circumstanced, it certainly parts with none; and as, on the contrary, the Hot-air bath promotes free perspiration and otherwise highly stimulates the skin, thus assisting to get rid of a large amount of effete material from the system, we can readily understand why the hot-air bath possesses such superior therapeutic powers to the others named.

The hot air does not act upon the human organism altogether as a hot stove acts upon wet linen, by simply *drying* it and leaving it stiff and parchment-like, though still, in a sense, it *does* act as a drying apparatus. It first induces a copious flow of perspiration from the body, and then, as it were, sucks this off; but as the original action still continues, more moisture continually rises to the surface, and covers and laves the skin, never leaving it dry. As fast as the moisture is sucked up, fresh supplies come to the surface. The amount of effete material got rid of in this way must be, and is, very great. The perspiration in time flows down the body in streams, like rain down the windows, and drops off into the bath like water dripping from the eaves. The sweat-glands are thus stimulated into doing their work thoroughly and effectually; the sweat-ducts are cleared out; and the pores thoroughly opened and cleansed. The skin becomes more soft, supple, and elastic; its small vessels are stimulated

to increased activity; the blood is purified; the nerves are roused up to discharge their functions; and altogether a new life is instilled both into the working of the skin and the economy in general. But it is by the draining away from the blood through the agency of the skin, of the effete and poisonous material of the former, that the Hot-air bath is so valuable, and in this respect it stands unrivalled and unapproachable amongst its compeers.

The Air-bath has three distinctive names given to it, according to the temperature to which it is raised. Thus, when ranging from 96° F. to 106° F., it is a *tepid-air* bath; between 106° F. and 120° F., a *warm-air* bath; and from 123° F. to 170° F., a *hot-air* bath.

In practice a room at the lower temperature is the first to be entered, and this may therefore be termed the *tepid room*; then, when the bather has become quite comfortable in this, he is passed on to the second or *warm-air room*; and finally, to the *hot room*. Very little time, however, need be spent in the latter, nor is it advisable. Some cannot bear it at all, and even faint out-right, if the temperature approaches the higher limit of 170° F. It is, moreover, quite unnecessary to bathe in such a temperature. It is far better, safer, and pleasanter to sit in the *warm air* apartment for five or ten minutes longer rather than submit to the scorching of hot air at a temperature only some 40° F. below the boiling point

of water. "Use, not abuse," should here be our motto, as in other things. A much higher degree of heat may, however, be borne when the bathing medium is air, than when it is liquid, as water. At a temperature of 170° F., the height to which the hot-air bath is raised, water would be decidedly scalding, and could not be borne by the naked body without the infliction upon it of great injury, which in many cases would also, probably, be followed by death itself. Though the temperature to which the body is exposed in the Hot-air bath is so much higher than that of the body, yet the temperature of the latter is never raised more than a degree or two above its normal standard. All the superfluous heat, as rapidly and as intensely as it is applied in such circumstances, is as speedily carried off by the skin and lungs in the form of sweat and watery vapour. The very powerful evaporation of moisture which is then ceaselessly taking place from the body cools it with sufficient celerity to keep in check the greatly increased tendency there is for it to become over-heated ; the evaporation operating as a most effectual self-acting safety-valve to the system, letting off all superfluous and injurious heat-pressure from within at the moment any danger threatens the organism from this cause, and never ceasing to discharge this important function till all risk from this source is completely at an end.

The proceedings adopted by the bath attendants in the Hot-air, or Turkish bath, have been sufficiently explained in a previous chapter, and need not therefore be again particularised.

The hot air used, it may be as well to state, is air that has simply been *warmed by contact* with a heated surface, or raised in temperature by being passed through heated pipes, or crevices, uncontaminated with the air from the fire. The air is *pure* air, simply raised in temperature, and not that which has been burnt, as that which has passed through a fire, whether coke or otherwise; nor that again which has resulted from the burning of gas jets, etc. The latter is in both cases laden with the products of combustion, chiefly carbonic acid gas, which is poisonous when inhaled, even when largely mixed and diluted with pure air. The fire, therefore, or the burning gas, if the latter be the heating agent, must be concerned in simply warming the air as this passes through pipes opening by one end in the pure atmospheric air from the outside, and by the other emptying within the hot room, without direct communication or mixture with that used in the burning of the fuel or gas. Many of the complaints we hear of, as after-results of a Hot-air bath, such as headaches, etc., are caused, I feel convinced, not by the bath itself, but from some fault in the warming apparatus, by which the burnt air from the furnace has effected an entrance along

with the pure air in the pipes, and has thus been unconsciously respired.

During the last few years many contrivances have been introduced to enable one to take a Hot-air bath within one's own house. The bather is placed in a kind of closet with his head outside, and this enables him to breathe the pure air of the room, while his body is surrounded with the heated and burnt air from a number of gas jets situated beneath the seat. These, though not strictly *dry* hot-air baths—since in the combustion of the gas watery vapour is formed as well as carbonic acid gas—are yet very effective, and are a great blessing to the community. I have one of these *Cabinet Turkish Baths*, as they are termed, in my own house, and I find it answers fully every advantage claimed for it. It provides a ready means of obtaining all the benefits of the ordinary Turkish bath. It is exceedingly simple, and consists of a neat cabinet, made of well-seasoned wood, taking up a floor space of only 2 ft. 5 in. by 2 ft. 8 in., and large enough to admit the person comfortably. It is mounted upon castors, so that it may easily be moved from place to place on the same floor, and it is light enough to be carried if required. But providing that the head remains outside, all the inconvenience frequently arising from breathing the heated air is removed, though the head, nevertheless, perspires almost as freely as the rest of the body. It is fitted

with a foot warmer and with an adjustable seat, so that it can be used by children and by adults of different sizes. A book rest is arranged conveniently, so that the time may be pleasantly occupied, and small doors are provided through which the hands may be passed in order to turn over the leaves of a book, to wipe the face, or remove a cigar from the mouth, etc.

The bath is heated by gas, or, where gas is not available, by a lamp specially manufactured, in which spirit is burned. It may be managed with the greatest ease without the aid of an attendant, being, in fact, quite as simple as an ordinary sponge or sitz bath. It is only necessary to fill the foot warmer with hot water, covering it with a piece of flannel, to light the lamp, and step into the bath with a towel round the neck to prevent the heat escaping too readily. Ample ventilation is allowed, so that the body is not exposed to the action of vitiated air, since this is constantly being renewed from outside. The bath constitutes, in fact, a small ventilated hot chamber, the time spent in which may vary from ten minutes to half an hour, according to pleasure.

To those who cannot afford the cost of the Cabinet Turkish Bath may be recommended the arrangement which admits of the bath being taken while sitting on an ordinary chair. A lamp—or better still, a gas burner or two, if gas be available—is placed beneath

the seat of the chair, and the person, together with the chair, is then enclosed in a sheet of waterproof material, over which a blanket may be thrown. The head is not enclosed, the sheet fits closely around the neck in order that the burnt air from within the sheeting may not be inhaled by the bather. Such arrangements may be had in the waterproof shops at a trifling expense, and they answer the purpose required very nicely.

After leaving the bath a good lathering of soap and warm water may be given while standing in the ordinary hot-water bath; the body to be then thoroughly washed, and afterwards rubbed well with hot towels, when the bather may jump into bed. This implies that the bath is taken at bedtime, which is perhaps the best time for baths of this kind. If taken previously, and before the duties of the day are over, it will be necessary to adopt the plan of cooling the body followed in the ordinary Turkish bath, and as previously explained.

THE HOT-WATER BATH AND THE VAPOUR-BATH.

These will for convenience be considered together. Both are *wet* baths, the former being hot *water* simply, and the latter hot water in the state of vapour.

In the hot bath the water is raised to a temperature of about 98° F., that is, to about the temperature of the blood as it is found in ordinary health, and from

this, after the body has been immersed, it may be increased to as high as 112° F. or more. The *warm* bath ranges from 92° F. to 98° F.; the *tepid* bath from 85° F. to 92° F.; and when between 75° F. and 85° F. it is said to be *temperate*; while a still lower temperature, down as far as 65° F., is called a *cool* bath, as distinguished from the *cold* bath. The temperature of the Vapour-bath, which may be regarded as a kind of *diluted* water bath, since the warmth is imparted by the same liquid, but held in suspension by the air in a finely-divided state, ranges from 90° F. to 100° F., when it is said to be a *tepid* Vapour-bath; or from 100° F. to 115° F., when it is termed a *warm* Vapour-bath; or from the latter temperature to as high as 140° F. or more, when it is called the *hot* Vapour-bath.

Both the Hot-water bath and the Vapour-bath are to be highly commended as a valuable and easily applied means of administering *wet* heat to the body, whereby the latter can be more pleasantly and effectually cleansed than by the use of cold water, or as a means of relieving certain congested or inflamed conditions of the internal organs, and for which purposes the hot bath is chiefly employed. Still, for their power of thoroughly removing from the system certain fluids and effete matters, neither of the wet baths can be compared with the Hot-air bath, nor for the subsequent elasticity of the feelings and the general buoyancy

of the whole animal organism engendered by the latter. Where it is desired to simply *cleanse the skin* from external impurities, the Hot-water bath is to be preferred ; but where it is required to operate upon the system as a whole—internal as well as external—then the Hot-air bath is *facile princeps*, and *the* bath, therefore, to be employed.

The question in each case, as to when, and for what particular purposes these baths are to be recommended, can here be answered only with some degree of difficulty. The constitutions and peculiar idiosyncrasies of different persons vary so much, and other considerations governing the question are so numerous and various, that no general rule suitable or applicable to all cases can be laid down. When the question arises, therefore, as to whether this or that form of bath should be used, or whether this or that degree of temperature should be employed, or for what length of time it should be allowed to operate upon the individual, or the frequency with which the bath decided upon should be taken ; all these and other questions of equal importance had far better be answered in each individual case by a properly qualified medical man, to be consulted for the purpose. With regard to the hot bath, it will suffice to remark that its use may, in almost every case, be safely recommended, at least once a week, for thorough cleansing purposes. For children, it should be used

—unless some special contra-indication exist, and as it *is* used in every well-regulated family—every night, just before the children are put to their beds ; in all cases, the whole body, of course, being submitted to the operation.

And here let me plead for a little maternal superintendence, at least during the children's bathing hour. It is almost superfluous to say that every nurse cannot be trusted to bathe the children. There are nurses and nurses. And I have no hesitation in saying that many a child's dislike to the bath, both present and future, has been brought about by the carelessness or ill-temper of the nurse whose duty it was to see to this daily operation. Sometimes the water has been too hot, at other times too cold ; or there has been carelessness in the matter of soap, this being allowed to get into the eyes of the little things. Then—and the truth must be told—when they cry for very pain, a piece of soap is thrust into their mouths as a punishment ! It may be asked if this is possible, to which I unhesitatingly reply in the affirmative ; and it is, moreover, true, for I have known such cases ! No wonder, then, that we sometimes find a dread of the bath in those who, had their mothers been with them, would have screamed with delight at the very prospect. Even the best of nurses cannot supply the place of the mother in the hearts of the little ones. Let us, then, remember the children, and

let the *mother* be present. For *then*, as we know, it is—

“A kiss when my bath is over,
A kiss when my bath begins ;
My mother is full of kisses,
As nurse is full of pins !”

The ordinary fixed bath, as seen in private houses, has been already described in connection with the *cold bath*, and to this the reader may refer. The pipe from which the hot water is drawn usually communicates with the kitchen fire, behind which is placed the boiler, and in connection with which are also other hot-water pipes for different parts of the house. This arrangement is very convenient, and also economical ; *convenient*, since the means of taking the hot bath are always in readiness, the kitchen fire being constantly required for domestic purposes ; and *economical*, as no extra or special fire is then needed for bath purposes.

But it is not every house that is supplied with these conveniences, and even where there is a bath fixed in the house we do not always find a hot-water pipe in connection with it. And in such cases the water has not only to be carried from the boiler downstairs, but has also often to be specially heated for the purpose, “giving more trouble,” as the saying is, “than the bath is worth,” for which reason the bath is often omitted altogether. To obviate these inconveniences there are now to be had special *Bath Heaters*, which

can be placed at the head or side of the bath. They are generally heated with gas, and some of them so perfectly economise the heat thus obtained that boiling water can be obtained at the rate of a gallon in a few minutes. John Wright & Co., Limtd., of Birmingham, make several of these handy contrivances. Amongst the advantages claimed for them are, that they require no fitting or special fixing, no kitchen boiler (with the danger of explosions in frosty weather), no pipes to be laid, their small cost, and economy in working.

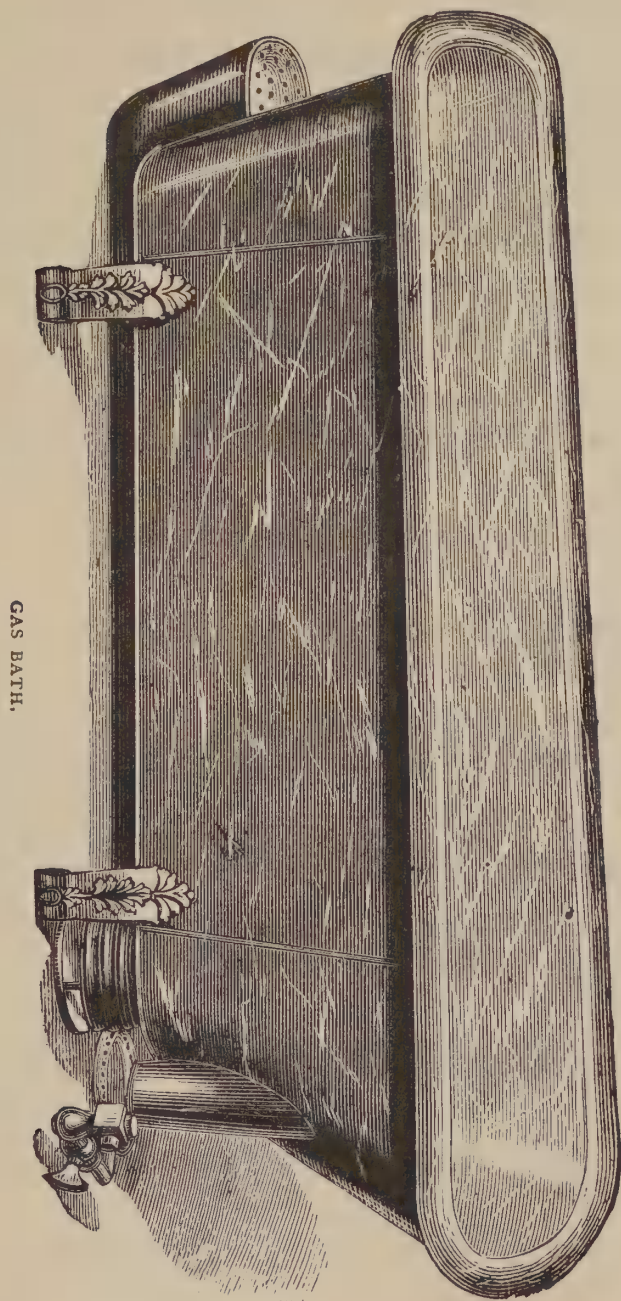
Another advantage is, that being placed in the bath room, the air of this apartment is likewise warmed, and also the towels, thus making everything nice and comfortable.

In Wright's



“Spray” instantaneous Water Heater almost the whole theoretical duty can be obtained from the gas,

whilst the cost is small, owing to its simplicity of construction. The Heater is well and substantially made, and is figured here. By means of this contrivance a large stream of water may be heated instantaneously in its passage through the apparatus, and it is therefore admirably adapted for the hot bath. The water on entering is projected in a fine spray, entirely filling the Heater, and in this condition the heated gases come in direct contact with it, and thus impart the whole of their heat to it instantaneously. It is a most excellent contrivance, and can be highly recommended. The same firm make a capital Gas Bath, that is, a bath heated by gas by means of a special contrivance attached to it and forming part of it. Such an arrangement would therefore be a good investment to those who, not having a bath already in their houses, contemplate purchasing one. A hot bath, containing over twenty gallons of water, can be obtained by this gas bath at a cost, I believe, of less than one penny, reckoning gas at four shillings per thousand feet! It was highly commended by the Committee appointed by the Gas Institute on Gas Baths, at the International Electric and Gas Exhibition, at the Crystal Palace, their report showing that in the baths made by this firm (John Wright and Co., Limtd.), 98·4 per cent. of the total heat of the gas was absorbed by the water.



GAS BATH.

There are, indeed, many gas water heaters now in the market, all very good, and admirably suited for the purpose in view. One by Willway, of Bristol, termed the *Automatic Gas Water Heater*, has some special features of its own, notably a provision against waste of gas, this being turned on and shut off by an automatic arrangement, just as the heat is required or not. By the old arrangement of small gas burners, more gas is generally burnt *after* the water has boiled than is used in raising the temperature of the water to boiling point. By the Patent Waste Preventer, when the temperature of the water reaches boiling point, the gas is automatically lowered to the smallest flame which will keep it so; and if cold water is added, the gas rises until the whole is boiling, when it is again lowered. More than fifty gallons of boiling water may be drawn in a day, and nine gallons may be kept at boiling point for twenty-four hours for two-pence. A nine-gallon heater will supply enough hot water for a large family, and will soon pay for its cost in the amount of gas saved. They may be used for kitchens, baths, lavatories, pantries, etc., and are especially useful and convenient as a ready means of keeping hot water always at hand. Another advantage of this automatic boiler lies in the fact that with an ordinary pressure of gas a $\frac{3}{8}$ -inch supply pipe is all that is necessary. The Waste Preventer is simple in construction, and cannot get

out of order. Each Water Heater is sent out with funnel and an inlet at the side, so that it may be either filled from a can at the top or connected with a supply cistern.

Want of space forbids more of these clever contrivances being described; but the reader will now, it is hoped, have no difficulty in making a choice of one or other of the foregoing most excellent and handy inventions, where such things are needed. One word of caution, however. See that there is *sufficient pressure of gas from the meter* when using these gas heaters, or disappointment may arise, and the heater be blamed for no fault belonging to it. If you want hot water quickly, you must have the heat supplied in a quick manner. What these gas heaters do is to wonderfully economise the heated gas supplied to them, not to manufacture heat from a poor and limited supply.

Another caution, and a very important one. In using arrangements of this kind it must always be borne in mind that provision must be made for the exit from the bathroom of the *burnt air*, and that for completely effecting this requirement there should always be a flue in connection with the boiler, and this flue should, if possible, be in direct communication at the other end with a chimney having a good draught. In houses where this *desideratum* cannot be had, it would be far better to be content without the Bath Heater,

and have the hot water carried up in pails, in the usual, old-fashioned way. This point is very important, and cannot, with impunity, be overlooked or neglected.

In the Vapour-bath the water is made to surround the person in the form of warm spray. In large public bathing establishments the bather generally sits in a small wooden closet, something like the Cabinet Turkish Bath, but larger, with his head outside, and the vapour is supplied in the form of steam, pipes for this purpose being laid on in connection with the boiler of the steam engine. In other cases the individual is ushered into a room, the air of which is filled with hot vapour, and which is therefore of necessity also respired by the bather. Of these two methods the former is to be preferred. After the bath the same precautions respecting the cooling down of the person, and the rest of the after-treatment as pursued in the case of the Hot-air bath, is to be adopted. As with the Hot-air bath, so also in the case of the Vapour-bath, during the past few years various means have been devised whereby a bath may be easily and economically obtained in one's own rooms. The leading principle of all these is, that the individual should be closely enveloped up to the chin in clothing which is impervious to moisture, and this usually takes the form of a specially-made Over-all, rendered air and water-tight by indiarubber, or some such material.

The subject, having stripped, sits on a cane-bottomed chair, or similar contrivance, with a lighted spirit-lamp beneath; the over-all being put on, and closely applied round the neck, to prevent the escape of the heated vapour generated by the burning lamp, a layer of moisture—partly from the lamp, and partly consisting of the perspiration from the skin of the person—is very soon found to cover the body. It is highly necessary to be borne in mind, when such a plan of taking a Vapour-bath is adopted, that, in addition to the heated vapour from the lamp, there arises also from it a certain invisible gas (*carbonic-acid gas*), which, if allowed to escape beneath the chin, and thus to be respired, may prove highly deleterious to the health of the individual; it is, therefore, of more than passing consequence that the over-all be applied round the neck with sufficient closeness to prevent the escape of this gas from beneath, which, as well as the accompanying vapour, always results from the combustion of ordinary fuel, whether this latter be in the form of oil, spirits of wine, or in the more bulky state of wood, coal, and such-like material.

This latter objection, or drawback, to the domestic Air or Vapour-bath—the liability, that is, of the bather's inhaling carbonic-acid gas—is overcome by the plan of substituting pure steam for the vapour obtained from the spirit-lamp, the steam being

generated in an ordinary kettle, and this having a tin spout of sufficient length to reach from the fire to beneath the bather's chair.

A still more primitive and economical way of obtaining a Vapour-bath is to generate the steam from a vessel, such as a common pail, this, half full of boiling water, being placed beneath the chair, and, when all is ready, putting a red-hot brick in the water, the bather being, as in the previous methods, closely surrounded with waterproof material, or simply covered with a thick blanket or two, previously well warmed.

In connection with the hot bath it may be well to mention a recent preparation, *Scrubb's Cloudy Household Ammonia*, consisting largely, as its name indicates, of ammonia. About a couple of teaspoonfuls makes a most desirable and luxurious addition to the bath when placed in it and well stirred. The preparation, besides being an efficient cleanser, makes the bath an unusually agreeable and stimulating one. Another recommendation is, that unlike washing soda or potash, where these are used for cleansing purposes, the liquid in question does not *depress*, nor unduly dissolve or destroy the epidermis of the bather's skin, and so render him liable to catch cold. On the contrary, it acts as a very agreeable and desirable stimulant to the latter, and leaves the bather in the enjoyment of a glowing feeling of exhilaration

and lightness of spirits peculiar to the use of this preparation. To rich and poor alike, the brain worker and the artizan, its use in the hot bath can be strongly recommended. It is as well, perhaps, to add that it acts in a different manner to a simple solution of free ammonia, in that it does not irritate the skin or spoil the hair. Only half the usual quantity of soap is required, and no soda, with this preparation.

And while on the subject of cleansers, it may, perhaps, be well to say something on the question of SOAP, to the manufacture and perfecting of which such marked attention has been directed during the past decade or two. Of course, there are many most excellent soaps now before the public; indeed, the numerous and ubiquitous advertisements on soaps, which have of late years flooded the kingdom, would lead "a stranger from a strange land" to suppose that we were a most cleanly people, and that one of our chief concerns was wrapped up in the question of soap. Without, however, going so far as this, we may safely say, that to the cleanly disposed the possession of a good soap is really of great importance; for though, on the one hand, we require an article that will easily and really cleanse, we do not, on the other, desire one that will dissolve away our epidermis from sheer excess of caustic alkalies, or from imperfect manufacture. There are,

doubtless, many soaps without these drawbacks, and it would be a pity to make invidious distinctions. Still, I wish especially to note, among the many specimens which I have examined, and of which I can speak well, one bearing the *Heron* brand, made by Messrs. Hearon & Co., of Southwark Street, London. It has many excellent qualities, but no faults. It is, for instance, what every soap ought to be, a most efficient cleanser; but besides this, and owing to its having combined with it a certain proportion of alcoholic solution of coal tar, it is also possessed of strong disinfecting properties. Amongst its other good qualities it is also claimed for it that it destroys not only the *pediculi* and such like vermin that are so prone to take lodgment on the various parts of our bodies, but even the *nits*, or eggs of these objectionable creatures. It is therefore good for children's heads as well as their bodies, and for others also of larger growth. It is not ungrateful to the senses, as might be supposed, but is really pleasant in odour, and its use in the bath leaves behind it a sweet and refreshed feeling that is much appreciated. It may be added that this article is made up both as a toilet and as a medicinal soap. This latter, being stronger in the coal tar product, is best to use where a strong disinfectant is required, as for vermin, in certain forms of skin disease, and especially for lathering and cleansing the body after such infectious

diseases as scarlet fever and measles, when it both soothes and purifies the skin. The toilet variety is particularly agreeable, as it contains a goodly percentage of glycerine, and is nicely scented. A special form is also prepared as a dentifrice, and is much thought of by smokers and others as a speedy and effectual means of sweetening the breath. For many reasons I can heartily recommend this very excellent brand of soaps.

CHAPTER VIII.

ON WATER.

BEFORE bringing our remarks on bathing to a close it is perhaps desirable to say a few words on the question of water itself—or rather, on that which we term *hard* water. Of course we all know what we mean by a hard water. We find, for example, that a hard water is a bad *cleanser*, that it consumes a great deal of soap before a *lather* can be made, and that when we have at last succeeded in this object and begin to wash off the soap or lather, we find the operation to be attended with great difficulty, the lather being converted into hard, curd-like particles or masses. A hard water is a wasteful and unsatisfactory water in every way. It is bad for the skin, making it rough, coarse, hard, and chappy ; it is bad in the wash-house for the clothes, for it is a bad cleanser, and destroys or consumes much soap ; it is bad for drinking and cooking purposes, and even for manufacturing processes, and for the boilers used in the generation of steam. A pure water is a priceless boon to a community, and is worth all the trouble and expense (and these are sometimes very considerable) of bringing it from a distance into our large cities. Vast sums were spent by the old Romans in thus

bringing pure water into their cities. Their mighty and far-reaching aqueducts are still to be seen in almost every European country, and they still strike the beholder by their magnitude, and the ingenuity displayed in their construction. It is only within the past fifty years that the importance of a pure water supply has been generally perceived by our public bodies and municipal authorities; but now every town in the kingdom is becoming fully alive to the matter, and is waking up to its duty and doing its best, we hope, in supplying the inhabitants with an abundance of this first of necessities. In the limestone and chalk districts it is very difficult to get a pure soft water. The water supplied to our vast Metropolis is loaded with lime and chalk; and it is difficult for one who has lived all his life in a town blessed with a liberal supply of pure soft water, as Glasgow, for example, or Lancaster, to realise how difficult it is to get one's hands and face clean in a place like London.

To remedy this undesirable state of matters in districts where hard water only is available, several *softening processes* have been brought before the public, and one or other of them adopted in certain large towns by the Borough Authorities. This is just what is required in such districts, and it ought to be the general rule in all parts of the country where chalky or calcareous waters have perforce to be used.

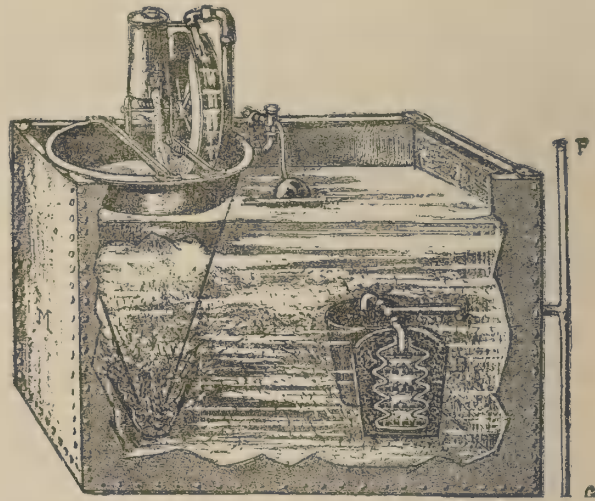
Such a plan attacks the mischief at the fountain head, and is the most economical method of dealing with the evil. The saving in soap alone, without taking into consideration that effected in time, trouble, and annoyance, together with the economy in the fuel required for our steam boilers, more than pays the cost of the process. In places where this method of purification has not been taken up, what, it may be asked, is to be done? Can the householder himself adopt some plan for softening the water for his own domestic needs? Let the following testimony given by a friend answer the question. He says:—"No one can imagine, except those who live in London, what it is to have dirty hands and faces which defy all attempts at washing. Such a time as we have lately been having baffles description, and the discomfort and disappointment arising from trying to make one's self clean by the water supplied by the London Water Companies are painfully impressed on the mind. It is almost as hard as the water of Kent, or any other chalky district, and defies the soapiest of soaps to make a lather. But I am 'happy' now, and can wash my hands in frothy soap-suds with a certainty of not getting chapped hands, be the weather what it may, even though I do not encase them perpetually in gloves. 'Anti-Calcaire' is the panacea, and I have found the way to use it best. Years ago I mentioned a powder called 'Anti-Calcaire,' which, if put into the

water ewer over night, made all the water in it deliciously soft by the morning, and I found this practice a great comfort, but it had its drawbacks in the shape of a dirty deposit on the sides of the earthenware jug, and the limited amount of water thus acted upon. Accordingly, I purchased and adopted a large wooden vessel in which to keep a sufficient supply of softened water always ready for use. This device pleased me greatly until I conceived the idea of softening the whole contents of my cistern at once, and then I applied to Messrs. Maignen, the patentees of the *Anti-Calcaire* powder, to know if it could be done. I discovered at once that they constantly undertook to soften large reservoirs of water for domestic purposes, by a very simple process, and after some consultations and the presence of a few well-conducted workmen in my cistern-loft for a day or two, I now find myself the happy possessor of some hundreds of gallons of delightfully softened water, equally good for drinking as for washing in."

We have here, then, one means at command for softening our own domestic water. It is, I believe, one of the best of the many processes brought before the public, and I can heartily recommend it. I myself have used the *Anti-Calcaire* for some years, and I find it to answer all the requirements claimed for it.

The illustration shows the method adopted by the Maignen Company for automatically supplying the

whole household with softened water. This, after being passed through one of the Filters (The "*Filtre rapide*"), supplied by the same firm, is ready for culinary purposes, and may be personally consumed either hot or cold with the greatest confidence. The apparatus works as follows:—The hard



water coming in through the ball-cock, rises over the water-wheel. The motion thus given to the wheel moves blades in the hopper, from which the "Anti-Calcaire" is thrust out through a slot, opened so as to deliver the exact quantity required to reduce the water to the desired degree of softness. Thus it is seen the distribution of the "Anti-Calcaire" is automatic. The salts of lime thrown out of solution and the spent "Anti-Calcaire" fall mostly to the bottom of the softening tank, whence it may be removed period-

ically ; the only labour required is to fill the hopper with "Anti-Calcaire" whenever required, and from time to time wash the filtering frames of the "Filtre rapide" by squirting water on them.

The comfort and satisfaction experienced in bathing in softened after being obliged to use hard water for this purpose, is something to be remembered.

It is perhaps desirable to explain here more distinctly to what cause waters owe their hardness, though this has already been stated by implication. All our domestic and drinkable waters are, of course, originally obtained from the clouds ; but though, before it falls in the form of rain, etc., it is quite pure, it soon thereafter becomes more or less contaminated with extraneous matters, and it is after being thus rendered more or less impure that we have to deal with and use it for domestic purposes. In lime-stone districts the water as it trickles down and makes its way through the chinks and crevices of the rocks becomes impregnated with the lime-stone, which becomes dissolved in it, like sugar is in tea, not simply *mixed* with it, as sand is in muddy water. And it is this dissolved lime-stone that confers upon it its peculiar and undesirable qualities, and *makes* it what is termed a "hard" water. Such waters are not, as might be supposed, necessarily muddy or dirty looking. On the contrary, they are more than usually bright and sparkling, cool and pleasant to the palate,

and hence agreeable to drink. Along with the lime-stone, or chalk, or magnesian lime-stone, as the case may be, such waters have also dissolved in them a greater or less quantity of *carbonic acid gas*, a most important factor indeed in causing the hardness of such waters; for though the presence of this gas would not of itself cause a soft water to become hard, yet without it the water would not be able to keep the lime-stone in solution. Take away this gas from waters loaded with chalk or carboniferous lime-stone, and the latter at once falls to the bottom as a sediment, and may be removed, either by filtration or simple decantation. The question therefore, since we cannot prevent the gas entering the water, resolves itself into the best means of getting rid of it after it *is* in. If we can effect this easily, quickly, and economically, we shall have a comparatively soft water, even though it be delivered into our houses very highly loaded with chalky matters.

One way of getting rid of the dissolved gas is to boil the water, and afterwards allow sufficient time for the lime thus forsaken by the gas to subside, or else to filter it off. But this, it need scarcely be said, would not only be a very expensive process, but also very wasteful in the question of time. Besides, boiling also drives off from the water the dissolved oxygen of the atmosphere, and the loss of this causes it to become insipid and disagreeable to the taste, though

this, of course, is a minor consideration where bathing is concerned. Another method is what is termed *Clarke's process*, which consists in adding to the chalky water a certain quantity, according to the hardness of the water, of quick-lime, a body which combines with the dissolved gas, when both the old and the newly-formed carbonate of lime at once slowly fall to the bottom. Strictly speaking, this dissolved gas is in union chemically with the lime, as a bi-carbonate, a salt which is soluble in water, but when quick-lime is added the latter robs the former of half its gas, and forms with it a carbonate which is *not* soluble in water; hence both the old and the new lime become precipitated, and the water correspondingly softened. The exact quantity of quick-lime required to effect this change, and without going to excess—that is, adding more lime than is necessary—is to be learnt by careful experiment. In cases either of excess or deficiency of added quick-lime, the water is so far short of being softened; hence care is required in properly apportioning the required amount.

In the preceding observations it will have been noted how carefully the lime-stone has been designated “chalky” or “carboniferous;” for it is such waters only as are charged with the *carbonate* of lime that are benefited either by boiling or by the added quick-lime. But we have mentioned the word *magnesian* lime-stone; and waters charged with sulphate

of magnesia or sulphate of lime are not rendered soft by either of the above processes. In such cases, a certain proportion of common washing soda added to the hard water will cause the lime to fall out, and gradually find its way to the bottom. If the water be charged both with carboniferous and magnesian lime-stone, then a combination of the two processes must be adopted to render such a water soft : that is quick-lime for the former, and the washing soda for the latter. Everything, however, considered, we have in Maignen's Anti-Calcaire a most useful, economical, and easily applied means for effecting our object.

CHAPTER IX.

THE RESUSCITATION OF THE DROWNED.

AS, notwithstanding the cautions tendered in the preceding pages to be observed by those who practise cold bathing, and especially bathing at the seaside and in our rivers, many sad occasions do arise—either from cramp, syncope, sheer imprudence, or mere accident—calling for immediate action on the part of the bystanders if life is to be saved, it has been thought advisable to add here a few simple rules to be observed for the resuscitation of the apparently drowned. There can be no doubt whatever, that if on-lookers in these cases only knew what to do, and would lose no time in carrying out proper means for restoring animation to the apparently moribund, numbers of valuable lives would annually be saved, and many a happy family spared a dreadful shock, and long sad days of bitter mourning.

Any rules, however, intended for this purpose should, if they are to prove of practical application, be not only capable of being immediately acted upon, but should also be couched in terms as plain and as terse as possible, consistent with explicitness, so as

to be easily committed to memory ; and thus become at once available whenever the necessity for them may arise. With this view, the author lays before his readers the following brief and simple recommendations, with the hope that by committing them to memory they may in some measure be armed against these sad and sudden emergencies ; and also with the hope that they may long be spared the necessity of having to test their value practically.

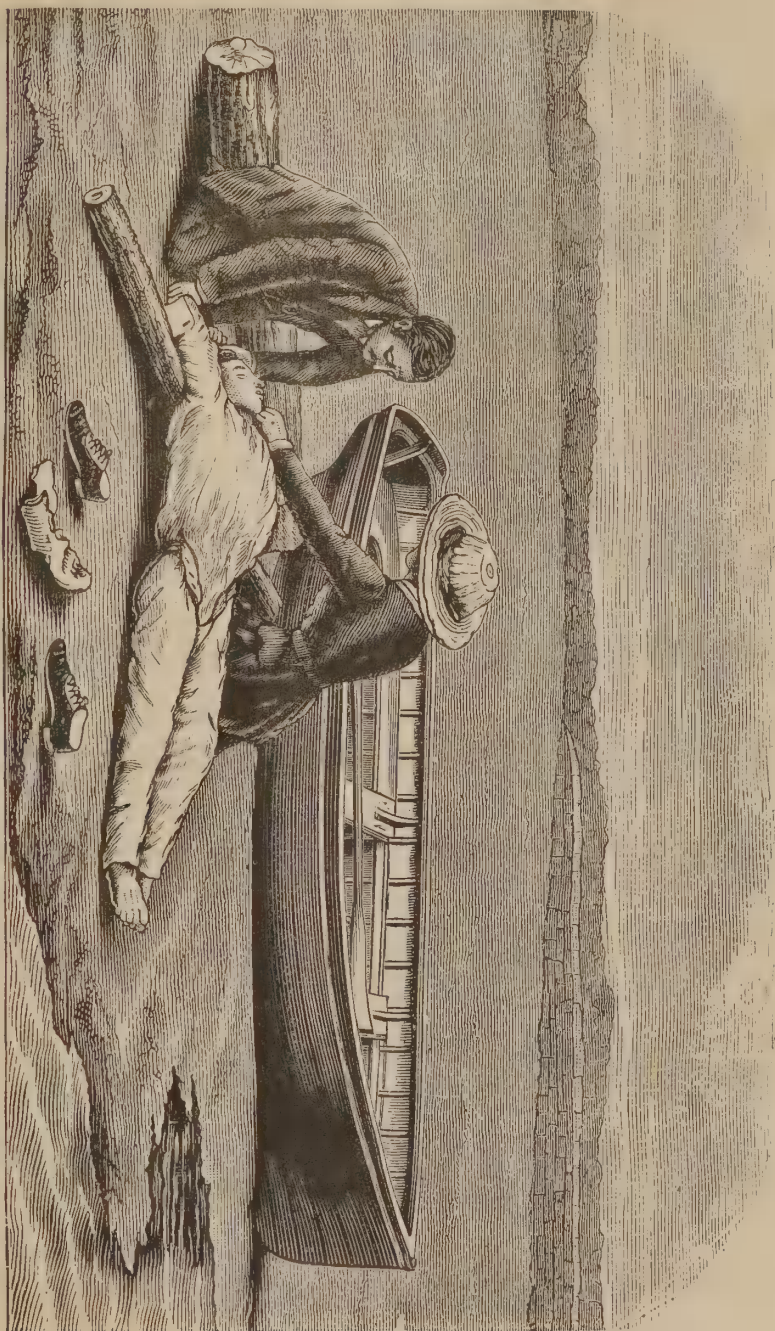
RULES FOR THE RESUSCITATION OF THE
DROWNED.

(1,) Send at once for THE NEAREST MEDICAL MAN; and *then* to the nearest house for DRY WARM BLANKETS. [These, immediately on arrival, to be wrapped round the body of the patient, the wet clothing (if any) being hastily removed for this purpose.]

(2,) Clear from the mouth and nostrils anything likely to interfere with respiration ; also, loosen the wet clothing (if any) about the neck and chest.

(3,) Do NOT lay the patient on his face for more than a second or so—just to allow the mouth and air passages to get cleared of water—but *on his back*, with a coat folded to act as a pillow FOR HIS SHOULDERS (not his head), which latter allow to hang slightly backwards *over the edge of the pillow*.

(4,) Instruct the *by-standers* to rub briskly *beneath*



SYLVESTER'S METHOD OF ARTIFICIAL RESPIRATION.

the blankets, his hands and arms, feet and legs (removing shoes and stockings if on), while you adopt—

(5.) ARTIFICIAL RESPIRATION. Kneel behind the patient's head. Seize an elbow with each hand, and bring his arms slowly and steadily up towards his head, stretching them as far upwards as possible. Keep them there a second, then quickly pass them down again across his chest, on which, by means of the crossed arms, make steady pressure for another second. This done, raise again the arms as before, and so repeat the operation continually, about twenty times a minute.

(6.) Do not too soon lose hope, or relax your efforts. PERSEVERE FOR FIFTEEN OR TWENTY MINUTES, or until respiration is re-established.

(7.) After respiration has certainly been restored, a teaspoonful or two of brandy and water may be given; and as soon as possible, a cup of hot coffee. Then,

(8.) Get the patient quickly to bed. Apply hot bottles to his feet, and endeavour to induce perspiration by extra clothing and hot drinks.

(9.) Remember! ACT AT ONCE, from the outset, and WHERE THE BODY HAS BEEN TAKEN FROM THE WATER! Lose not a moment!

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